

myHouse

3D-HOME DESIGN

For do-it-yourself Architects



User's Guide

DesignSoft

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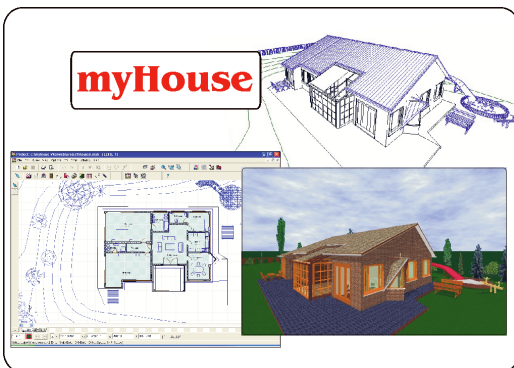
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Chapter

0



1 Introduction

Have you ever dreamed of designing your own home? Are you ready to talk to an architect about transforming the ideas in your head into a house or new addition? Then *myHouse* is the right tool for you.

With *myHouse*, exploring different design ideas is easy and enjoyable. With a few clicks of the mouse, you can fill a floor design with walls, windows, stairs, plants - your imagination is your only limit. Your designs will awe your friends and family and can be accurate enough to show an architect exactly what you want to build.

If you like, you can start with one of the home designs provided by *myHouse*. Changing elements in a completed design is an excellent introduction to the power of *myHouse*. Experiment until you become familiar with how easy it is to both visualize and modify elements of a design. Take the time to switch back and forth from 2 to 3 Dimensional views, zoom in for a closer look, move a couch around, or drag a wall with the mouse.

Starting a new design is also easy - no matter how simple or how grand the house is you want to design. The basics come first, such as the foundation and walls. Using the icons and the drop-down menus, you can draw and even modify these elements in a minute or two.

You will find that the time-consuming part of house design is making up your mind. *myHouse* puts so much flexibility at your fingertips that you will be tempted to tinker and to dream for hours at a time. Exactly what shape and size, for example, is the perfect den for relaxing on Sunday afternoons? Are we talking an Olympic-sized pool in the backyard, or a more intimate setting screened with plants?

When the skeleton of the plan is ready, you select doors and windows for each room from an expandable library. Connect different floors with stairs and finish them off with a variety of rails and finishes to suit your every whim. Now you are ready to fill your rooms with appliances and furnishings. Once you select the types and sizes you want, you can move them around the rooms until you are satisfied that you have found the best arrangement. Then using the 3D view and the photorealistic Raytracing feature the end result could be a design like the one shown on the next page.



Photorealistic 3D rendering of a myHouse design.

1.1 Inside myHouse

The *myHouse* product includes the following:

Menu and Icon-Driven Drawing Program: This software allows you to design the house of your dreams quickly. You can execute the necessary commands either with a mouse or from the keyboard. Online Help is available when needed.

Pre-Drawn Building Elements: The elements you use to create a design have been pre-drawn by professionals and compiled in libraries. You pick an element from a library, set its parameters (such as size and color), and place it in your design.

Registration Card: Fill out and send in this card to receive free technical support, notice of upgrades, and other special offers.

Modeler Software: Use this functionality to create or modify your own symbols and libraries.

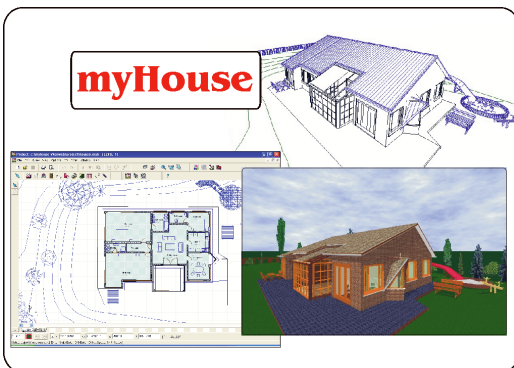
Stair Designer: With the new Stair Designer it is very easy to design and place stairs in your design. You can use the various templates or start from scratch and design your own custom stairs.

Roof Designer: The myHouse Roof Designer makes it very easy to create and place a roof on your design. The Roof Designer automatically generates roofs or allows you to manually create or edit roofs and view the results in 3D.

Terrain Designer: You create the topography of the terrain by putting down the corner points and the other defining points (put down by pushing Insert) and defining their relative height to each other. This way you create a terrain for 3D view.

User's Manual: 9 chapters and two appendices to help you along the way.

Chapter



2 Installation

This chapter outlines the recommended system setup for installing *myHouse*. The second section provides the few easy steps required to load the software.

2.1 System Requirements

The minimum suggested configuration of hardware and software for running *myHouse* is the following:

- IBM or IBM compatible PC with 486DX
- 1 GB of RAM (1GB or more suggested)
- 300MB of hard disk space (400MB or more suggested) Mouse or Windows compatible pointing device Microsoft Windows 9x/ME/NT/2000/XP/Vista
- 20X CD-ROM drive

2.2 Installing the Software

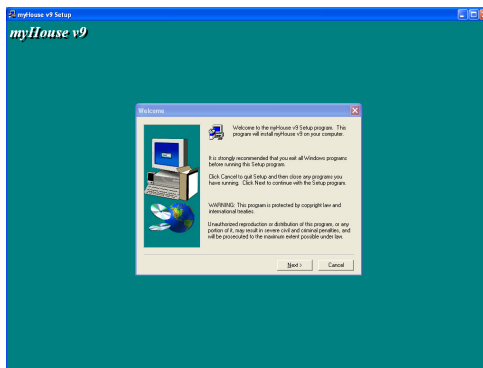
Check the list of requirements in the previous section before you install *myHouse*. To install *myHouse*:

1. To begin the installation simply insert the CD into you CD-ROM drive.
2. The Setup Program will start automatically if the Auto-Run function of your *CD-ROM* has been enabled (Windows-Default). If not, select *Start/Run* and then type:

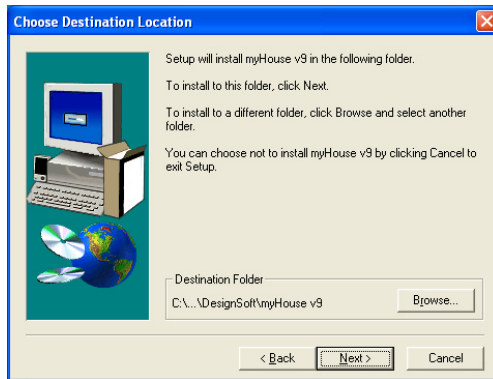
D:\SETUP (where *D* represents your *CD-ROM* drive.)

(If your *CD-ROM* drive is identified with another letter, type that letter instead.)

3. The setup screen shown below opens. Click on Next.



4. Check the target drive default setting (c:\program files\designsoft\ myHouse vn\). Highlight the setting and type a different location if desired.



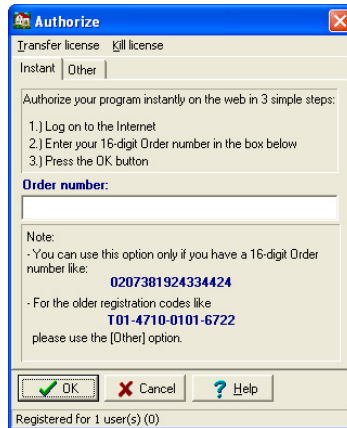
5. Select a typical, compact, or custom installation. A description of each is provided. Most users should choose “typical.”
6. Select a program folder name. The default name is *myHouse.vn*.
7. Check the settings summarized by the installation program. If acceptable, click the Next button. Insert the remaining disks when prompted.
8. Once Setup is complete, click Finish.

Your *myHouse* is now installed. To access the program, go to Start / Programs / myHouse for Windows / myHouse.

2.3 Software key authorization

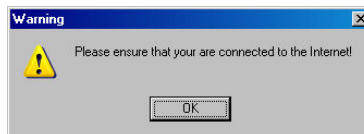
In order to run this program, you must receive authorization from DesignSoft. When you first run the program, a message box appears showing your initial authorization status. If you do not receive authorization, you are normally limited to 31 sessions to try the program.

At the end of the trial period – but preferably as soon as possible – do the following: Run the **Help / Authorization / Authorize** menu. The **Authorize** message box appears:



If you have received your program with a 16 digit **Order number** you can authorize your program in 3 simple steps described in the dialog box above.

It may be that your firewall does not allow your program to connect to the Internet. In this case you will get the following messages



If you are connected press OK. The following dialog appears:



Press **Yes**. Your **Site Key** will appear in a browser. Copy and Paste this into the **Authorization** dialog of your program.

If you do not have an **Order number**, or it does not work for any reasons or you do not have Internet connection, then click on the **Other** tab on the top of the dialog box. The **Other** page of the Authorize message box appears:



This dialog shows your personal **Site code**, which identifies your computer.

Record and send your **Site Code** and your **Order number** to DesignSoft by email or using the given web address. Always use Copy and Paste when you need to copy these information from one field into another.

If you have received the program on CD, the Order number is provided with the CD. If you receive the program as download it should be included in the email containing the download link.

Note, that if you click on the email address above, your default email program starts using an initial email template, that already includes both the Order number and the Site key.

If you prefer, you can click on the <http://www.designsoftware.com> .com address and select Registration on top of the screen, where you can enter the necessary information.

Whichever option you choose, make sure you give us your

- **Site Code**
- **Order Number and**
- **your email address**

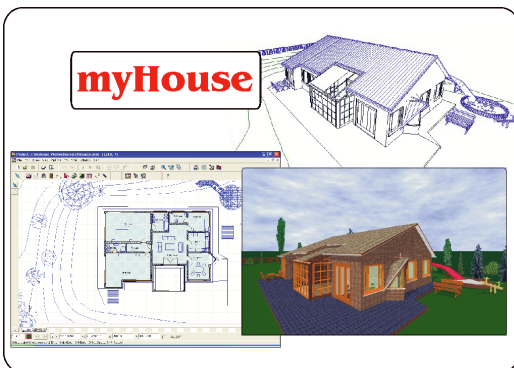
so that we can send you your authorization code (site key).

If you contact us by email or via the web, you will shortly receive an acknowledgement of your transaction by email. If you haven't received this acknowledgement very soon, perhaps you mistyped your email address, so you should re-send the information. Within a few working days, we will send you your site key by email.

When you receive your **Site key**, run the **Authorize** menu again, enter the **Site key** into the **Site key** field, and press OK.

If you want to move your authorized program to another computer, use the commands “*Transfer using removable media*” or “*Transfer using Internet*” from the **Help / Authorization** menu. The default password of these commands is **ProgramProtection**. For more information see the **Help** of the **Authorization** dialog and check **Transfer License**.

Chapter



3 The Basics

This chapter describes some fundamentals you need to start using myHouse for Windows quickly and easily. These include:

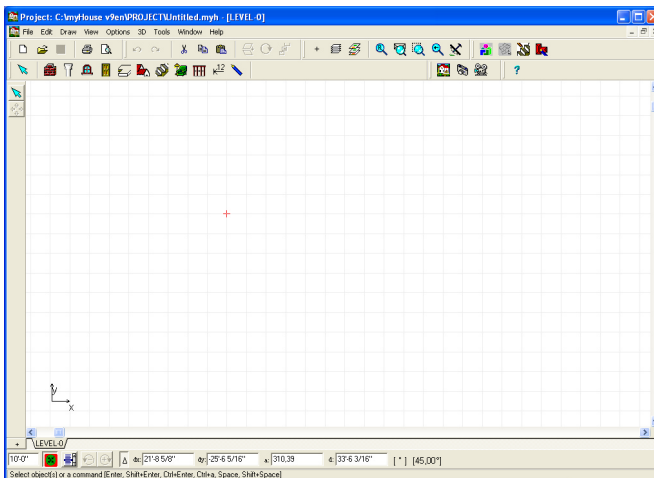
- Looking at the myHouse window
- Understanding distances in myHouse*
- Working with Windows
- Entering data
- Handling files
- Viewing designs
- Using help

3.1 Looking at the myHouse Window

To open *myHouse* in Windows, click the Start button, select Programs, then *myHouse for Windows*, then *myHouse*. You will then have access to the *myHouse* drawing screen. There are four elements on this screen, as shown on the next page.

3.1.1 Drawing Area

This window is where you draw, edit, and view your designs. Tasks are accomplished by a few clicks of the mouse and movement of the cursor. Note that to enter elements, you have the option of clicking and holding down the left mouse button as you drag the mouse. You may be familiar with this approach from working with other Windows programs.



3.1.2 Menu Bar



The menu bar contains nine options. Click on an option to see the drop-down menu associated with it. For example, clicking on Draw opens a menu containing everything you can insert into a design.

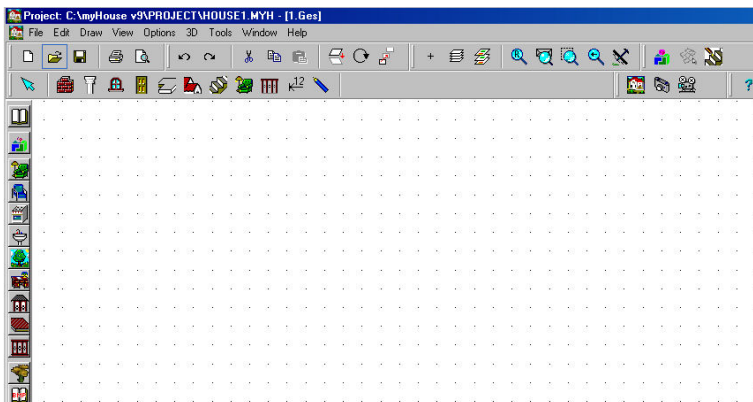
One way to move around myHouse quickly is to click (or drag) the mouse through a series of menus. Menu commands followed by an arrow open sub-menus. Commands followed by ellipses (...) open dialog boxes. Click the mouse through the menu series. Continue until you reach the final menu item you want.

Note: that you can also pull down the menu associated with any option on the menu bar by pressing ALT-key, where “key” is the underlined letter in the name (such as F for File).

Note: The drawing area shows one floor, or level, at a time. When you open a new file, the drawing area shows Floor-0, by default. The name of this level appears in a tab at the bottom of the drawing area.

If you add additional levels, you will see more tabs on the bottom of the drawing area. Click on the tabs to move between floors.

3.1.3 Toolbars



Another way to move around myHouse quickly is to click on the toolbar buttons. There are two levels of buttons: those in the toolbar across the top of the screen, and those running down the left side of the screen. The top-level buttons include those shown below.

Note: To check the name of a tool, move the mouse over the button. A tool

tip appears with the name of the button.



Select an object

Move selected objects with cursor arrows



Walls



Dimension lines



Columns



Drawing tools



Windows



Redraw



Doors



Slabs



Zoom to Extents, Window, Last, 2D Air view



Roofs



3D External view



Stairs



3D Internal view



Symbols



3D Movie Player



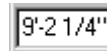
Rails



Help



Level Manager



Level height



Level Name



3D Modeller



Terrain Designer



Stair Designer



Roof Designer



Rotate left, right



Rotation angle



Snap On/Off

As you drag the mouse over the primary bar, the coordinate line at the bottom of the screen indicates the purpose of each button. Clicking one of the toolbar buttons opens up a secondary set of buttons on the left hand side of the drawing area. These relate specifically to the task at hand - if you click on the Slab button, for example, a button for each of the two possible slab shapes appears to the left. You use these buttons as shortcuts for inserting, modifying, enhancing, and viewing your designs. More detailed information on the role of each button appears later in this manual.

3.1.4 Coordinate Line

Δx :	12'-0 13/15"	Δy :	-5'-0 3/8"	Δz :	283.30	Δ :	52'-5 - /4"
--------------	--------------	--------------	------------	--------------	--------	------------	-------------

The line directly under the drawing area is the coordinate line. Look in this line for data about the positioning of design elements.

x and y : *myHouse* defines the position of the cursor on the screen through a coordinate system (see “Manually Entering Coordinate Values” coming up in this chapter). The y value defines the amount of movement up and down relative to a fixed point, and the x value defines the amount of movement sideways. Use these values when positioning design elements.

d (Length): Length data is provided only for walls, lines, etc.. After you click to define the first endpoint of a wall, the distance the cursor travels from that point is shown here.

Angle: If you are inserting a wall or lines, etc., its angle is indicated here.



Origin Placement: Absolute/Relative Press **F5** to toggle between absolute and relative placement of the origin of the coordinate system. Absolute means that the origin remains at the lower-left of the drawing area. Relative means that the origin moves to the first endpoint of each new design element, as you anchor it.

Draw terrain contour polygon [Enter, Esc, x , y , Δ , d]

Messages: Information about the current action is displayed to the left on the coordinate line.

3.1.5 Function keys

Use function keys or key combinations to change between units or states, or to perform specific operations. The function keys are the following:

- F1** Help.
- F2** Automatic magnifier: an area of approximately one square meter around the drawing pen or selection arrow will be magnified to the size of the whole design window. Press F2 again to return to the original scale.
- F3** Setting step distance: In the default setting, the software allows you to move your cursor in millimeters. Press F3 to change into centimeters. Pressing F3 again returns the units of measurement to millimeters.
- F4** Zeroing coordinates and relocating the relative coordinate system: The coordinates can be seen at the bottom of the design window. To zero the coordinates, press F4. The origin of the coordinate system will be relocated to the cursor's current position, indicated by the appearance of a small red cross. The elements are then re-matched. Most functions (e. g. drawing new walls) will

allow for this option, treating the given point as a new origin when removing the cursor. Thus, after selecting the starting point for a new wall, the second point will be represented in the coordinate system relative to the first one. Pressing F4 to specify a new origin for the coordinate system.

Note: If the Snap function is on, pressing F4 also invokes a re-matching of elements, readjusting the crosshairs to the element which is within the range specified in the Snap adjustments.

- F5** Changing between the absolute and relative coordinate-system Press F5 to switch between coordinate-systems. The origin within the absolute coordinate-system is the upper left corner of the design window. It is not advised to begin your project from the absolute zero point. At the beginning of a new project, the software offers an area of 30.000 by 30.000 cm as the site to start your project. You are able to create your project in an area extending approximately 500 meters in both directions.
You can easily return to the absolute origin point by using the scroll bars.
- F6** Redraw screen

3.1.6 Key combinations

Key combinations

Shift, Ctrl Holding down Shift or Ctrl during editing allows you to introduce new elements at an orientation in increments of 45 degrees (0, 45, 90).

Space When drawing a wall, pressing Space modifies its thickness. Pressing Space also toggles between superimposed elements to assist in selecting them.

The key combinations for all functions that can be accomplished with shortcuts are listed next to the function names in the various menus.

File menu:

Ctrl+F3	Open	Open a project
Ctrl+F2	Save	Save a project
Ctrl+P	Print	Print the contents of the active window
Alt+F4	Exit	Close the program

Edit:

Alt+BkSp	Undo
Shift+Alt+BkSp	Redo
Ctrl+X	Cut
Ctrl+C	Copy to clipboard
Ctrl+V	Paste from clipboard
Ctrl+Del	Delete
Ctrl+A	Select all
Ctrl+N	Select next
Ctrl+S	Deselect all

View menu:

Ctrl+F	Foils...
Shift+F	Level foils
Ctrl+G	Grid on/off
Ctrl+W,E,L,D,Z,+,-	Zoom options

Options menu:**Ctrl+O** Orthogonal editing on/off

3.2 Understanding Distances in myHouse

3.2.1 The Cartesian Coordinate System

myHouse uses a Cartesian coordinate system to help you locate exact points while you are drawing and to measure distances accurately. This means that the program defines the position of the cursor relative to the origin point of an x,y axis. Touch the screen with your finger. Think of that point as the origin, or center, of an imaginary x,y axis. Any point above your finger has a positive y value; any point below your finger has a negative y value; any point to the right of your finger has a positive x value; and any point to the left of your finger has a negative x value.

When you begin a design, the origin of the coordinate system (0,0 point) is by default placed at the lower left corner of a large drawing area (32000'x 32000' or 10000x10000m). By default, the drawing window displays only part of that area (130'x 80' or 40x25m, depending on screen resolution). You can use the scroll bars or the Zoom function (outlined later in this chapter) to move around the drawing area.

If you press **F5** for absolute placement of the origin, the origin moves to the lower- left corner of the drawing area. In contrast, if you toggle back to relative placement by pressing **F5**, the origin will move to the first endpoint of any element you insert.

You can also manually set the placement of the origin with the **F4** key. Place the cursor where you want the origin to be and press this function key.

How do you use the Cartesian coordinate system to help you design your home? With the x,y axis, you can precisely identify the position of any point in the drawing window. As a result you can ensure that:

The endpoints or cornerpoints of two building elements coincide exactly. A building element is drawn with the exact length and angle required. Design elements are correctly placed relative to each other.

Another function in myHouse provided for aligning building elements is the snap-to-grid. This grid is represented by light blue dots in the drawing window. You can have the endpoints of building elements snap to the grid points when you draw them. You can, of course, change the size of the grid. This function is explained in more detail later in this manual.

3.2.2 Manually Entering Coordinate Values

Besides clicking and moving the mouse to insert a building element, such as a wall, you can manually enter specific coordinate values for that element. For example, let's say you have clicked the mouse to anchor one endpoint of a wall. Now, hit the "X" or "Y" key on your keyboard.



Type a value for one or both coordinates and hit "Enter." The wall is drawn to the dimensions you chose. Hit "Enter" again to anchor that second endpoint. Moving the mouse before you hit "Enter" the second time will change the coordinates of the second endpoint.

Note: If you move the cursor after you anchor the first endpoint of the wall, the x and y values of the cursor position will not be added to those you type in the Coordinates box.

3.2.3 Using Zoom

Using the Zoom commands from the View menu, you can increase or decrease the amount of space represented within the drawing manual. For example, if you choose Zoom Out / Ctrl -, your plan will become smaller and you'll see more of the drawing area. You can continue to draw and modify your design in this zoomed view.

If you have a scroll wheel on your mouse (and it is in standard Windows mode), it can be used to magnify or scale down some elements of your project.

3.3 Working With Windows

If you are familiar with other Windows programs, most of the commands under the File, Edit, and Window menus in myHouse need little explanation. For help, see your Windows documentation. Some myHouse-specific aspects to these commands are noted in the following descriptions.

3.3.1 Common Windows Commands

From the File menu

New: Use this command to open a new, blank drawing window. Remember to save any project you are closing if you want to.

Open: By default, the Open command looks for files in the Project subdirectory, as defined in install:

(c:\myHouse\project)

myHouse files carry the extension .myh; this extension is selected by default in the Open dialog box. To open files from earlier versions of *myHouse*, you'll need to change the "Files of type" in the Open dialog box.

Close: Use this command to close the project.

Save and Save As: By default, files are saved with an .myh extension. When saving a new project for the first time, use Save As. When saving your work on a project as

you go along, use Save.

Print: Use this command to set printing options and then print your 2D designs. You can choose to print the entire drawing, or only what appears in the current drawing area. You can also select from a wide range of scale options as well as other options to enhance your printout.

Export: Use this function to save projects as .dxf extension files. You can then import your plan into AutoCAD for plotting.

Bill of Materials: Use this command to open the automatic bill of materials spreadsheet. A more detailed explanation of the Bill of Materials is covered later in Chapter 6.

From the Edit menu

Undo: Use this command to erase work you have just performed. The Undo command is unlimited so you can erase as many elements or commands as you have performed in a work session, in reverse order.

Redo: This command will redo any work that was just undone. Like, Undo, this command is unlimited.

Cut, Copy, Paste: Select a design element or elements, and then choose one of these commands. Anything you select with the Cut command is copied to the clipboard. If you then choose the Paste command, a rectangle appears on the screen. Move the rectangle with the mouse and click to anchor. The cut material reappears.

Delete: Select a design element by clicking the Pointer icon and then clicking on the element. Once that element is highlighted, use this command to delete the element.

Select All: This command selects all the design elements in the drawing window. You can now perform editing commands on these elements as a block.

Note: You can also select a group of design elements by clicking the Pointer icon and clicking and dragging to create a selection box. All elements completely within the box will be highlighted.

3.3.2 Using the Mouse

Using the mouse to perform the commands in myHouse is the fastest way to create your design. Much like other Windows programs, use the mouse to move the cursor in myHouse. Click and drag symbols to their new positions, click walls into place, double click on elements to change their parameters, and click on the horizontal and vertical scroll bars to move to other sections of your drawing area.

In the 3D viewer the left and right mouse button – or the scroll wheel - can be used to zoom in or out of the project, while the left button is used to rotate the building.

Note: In most cases, the cursor in myHouse can be moved by moving the mouse or by using the arrow keys on your keyboard.

3.4 Entering Data

You can enter both alphanumeric (text and numbers) and numeric data with this program. No restrictions have been placed on the alphanumeric characters you can use when typing text. To enter ASCII characters (such as accent marks), press the appropriate key or use the key combination of the character's ASCII code.

The numeric data you enter is interpreted as either feet/inches (ft/in) or millimeters, centimeters, or meters. Set your unit of measure with the **Change Unit** command from the Options menu. For the English unit system (ft/in), the following rules apply.

1. Place a space between an integer and the following fraction. For example, 1 1/4.
2. Indicate the measurement unit as feet (') or inches ("). The default is inch.
3. Do not bother putting in 0" with a foot measurement. The program will do this for you automatically. For example, 6 feet does not have to be written as 6'0", it can be written as 6'.
4. Except when working in 3D, convert numbers from decimals to fractions. Sometimes the program will convert a decimal's absolute value to fractional form, with suitable approximation. At other times, you will see an error message indicating that you entered a number in the wrong format.

To change a numeric value for a parameter, highlight the current entry and type the new value. Hit "Enter" to lock in the change.

3.5 Handling Files

myHouse assigns the following extensions to files:

.MYH - All projects in *myHouse*

.DXF - This is a standard CAD file format. Save files in this format by selecting Export from the File menu. These files can then be opened in a CAD program for plotting of the designs.

.BMP, .JPEG - Bitmaps are the format for saving painted 3D views of your design. Click on the Save icon to open the dialog box for saving one of these views.

.AVI, FLV, SWF - You can generate a movie tour of your home.

.MOV - All movie files created. When you create a QuickTime movie, you are asked to name it. You can access all of your .mov files by clicking on the Create movie/Quick Time function.

.WRL, .WRZ - With the State of the Art 3D tools of myHouse you can create virtual reality panoramic images that can be explored interactively both on your PC and on the Internet. You can navigate within the 360° scene, jump to another scene, zoom in and out in real time.

3.6 Viewing Designs

Viewing your designs in different ways is half the reason for using myHouse. You will want to show off your designs from many different angles, from both inside and outside. Also, looking at the design from various perspectives is part of critiquing it.

Here is a general overview of the different ways you can look at a design:

2D: This is the default view when the software opens. This is where you do your floorplan creation and editing and where you add your text.

3D Exterior View: Selecting **External View** from the **3D** menu will generate the exterior 3D view of your design.

3D Camera View: For a 3D rendering inside the design, select **Internal View** from the **3D** menu. Click the camera into position. Doubleclick on the camera and enter the proper parameters (camera angle, height, width, etc.). Click “3D View” to have that perspective rendered.

Movie: You can create a movie of the inside or the outside of your design as if you had a video camera in your hand. There are three steps involved in creating movies; Placing the cameras, creating the movie, and playing the movie. These steps are covered in more detail later in this manual. (See 3D menu)

There are several ways to view the 3D renderings in *myHouse*.



wire.

Wireframe: The building elements look as if they are made from



Hidden-line rendering: In this view, the background lines are hidden to create a realistic wire view of the design.



Painted design: The program paints your 3D rendering so that you see a solid, full-color picture.



Photorealistic rendering (Raytracing): There are some additional functions used for viewing and for help in editing floorplans.



Zoom: You can zoom in on any part of your design by selecting one of the options in the **View** menu or by clicking the Zoom toolbar icon. Use this for greater accuracy in positioning objects or for easier editing.



Air view: You can also use Air View as a form of zoom. Select **Air View** from the **View** menu or click on the Air View toolbar icon. The Air View window opens, in which you can move or resize a zoom window. The design elements shown inside the zoom window appear in the drawing area when you

close the Air View window.



Layer: Choose **Layer** from the **View** menu to help you construct and view a multilevel design. You use this function to help align levels or to view a floorplan while hiding some of the design elements such as dimension lines or slabs.



Rotate: Rotating is an option with both the 3D external and internal views. Using this function will allow you to view the 3D rendering of your design from any perspective. This may also be done using the scroll wheel of the mouse, or by moving the mouse forward/back while holding down the right button.

3.7 Using Help

You have several choices for online help in myHouse..

Double-click a design element. Information about the element appears in a dialog box. Change the values as needed.

Check the default parameters for design elements. Select **Default Values** from the **Options** menu.

Press **F1** or select the **Help Index** from the **Help** menu. Here you can use keywords and other searching aids to find a specific topic.

Contact Technical Support using one of the following options.

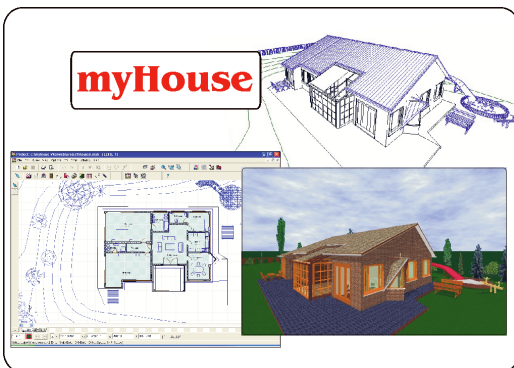
1. Visit us on the World Wide Web at: *www.designwareinc.com* or *www.designsoftware.com* . You may find there already the answer to some problem if it already came up at other customers.

Note: Before contacting Technical Support, be sure you have the version number of the myHouse software from Help / About in the program.

2. Send an e-mail to Technical Support of www.designsoftware.com/techsup.php

Chapter

IV



4 Quick Start

This chapter takes you through the basic steps required to create your dream home. By following along, you will create a floorplan with a furnished kitchen. When you are through, your plan will be similar to the one shown below and you will be ready to start creating designs on your own.

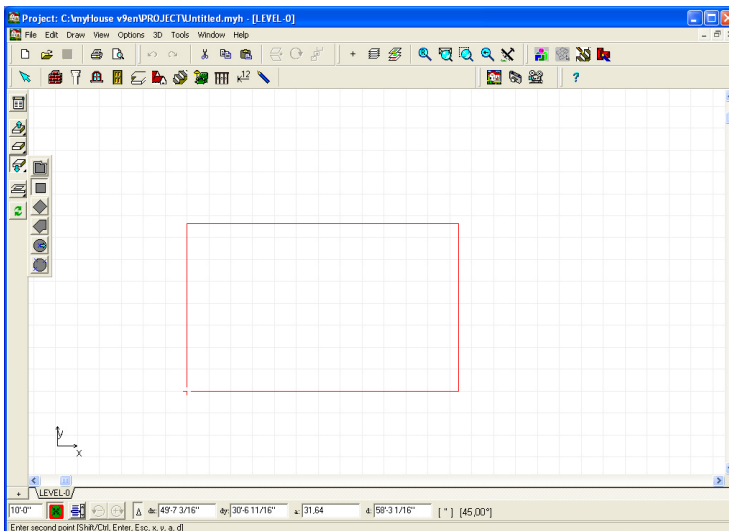
Let's begin:

4.1 Draw a slab

We will start with the floor of the house, called a slab in myHouse. Select **Slab** from the **Draw** menu. Drag the mouse to the right and select **Rectangle** from the pop-up menu. Or, click the **Slab** icon on the top toolbar, then the **Rectangle** slab icon on the secondary toolbar that appears on the left.

Position the cursor, which should now be a set of crosshairs, in the upper- left hand portion of your drawing area and click once. Then drag the crosshairs towards the opposite corner of your drawing area and click again to lock in that corner. Your drawing area should now have a rectangle in it. Make sure the rectangular slab is quite large as we will be adding design elements to it.

If you are unsatisfied with the slab you have created, select **Undo** from the **Edit** menu and start over.



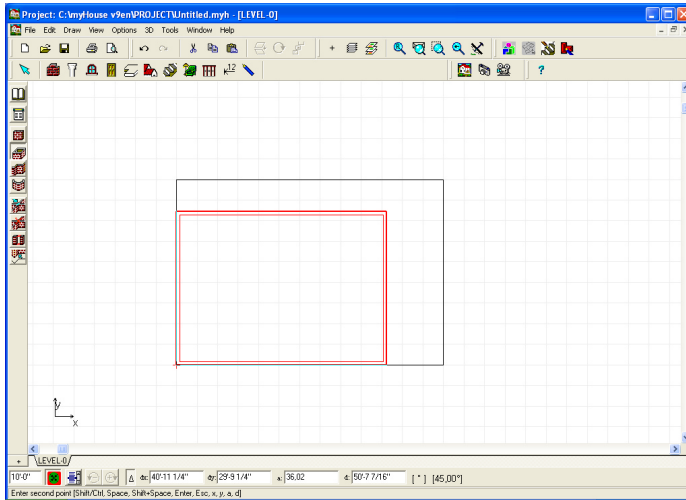
Draw a rectangle slab

4.2 Draw exterior walls



Select **Wall** from the **Draw** menu. Drag the mouse to the right and select **Rectangle** from the pop-up menu. Or, click the **Wall** icon, then the fourth icon down on the secondary toolbar.

Place the cursor over the upper-left hand corner of the rectangular slab you just created and click once. Drag the cursor to the opposite corner of the rectangle slab and click again.



4.3 Draw interior walls

Select **Wall** from the **Draw** menu. Drag the mouse over and select **Single** from the pop-up menu. Or, click the third icon down on the secondary toolbar.

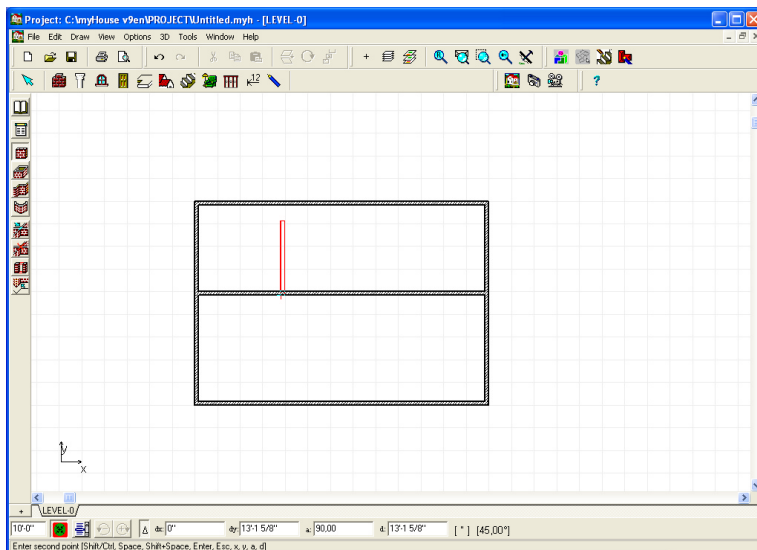
Move the cursor to the inside edge of one of the exterior walls you already created. Click to anchor the first endpoint of the wall, then move the cursor until you are satisfied with the wall's length. Click to anchor this second endpoint.

Note: If your walls are not being drawn at right angles to each other, select **Ortho** from the **Options** menu.

Shift, Ctrl: Holding down Shift or Ctrl during editing allows you to introduce new elements at an orientation in increments of 45 degrees (0, 45, 90).

Space: When drawing a wall, pressing Space modifies its thickness. Pressing Space also toggles between superimposed elements to assist in selecting them.

Continue drawing interior walls until your design looks like the one below.

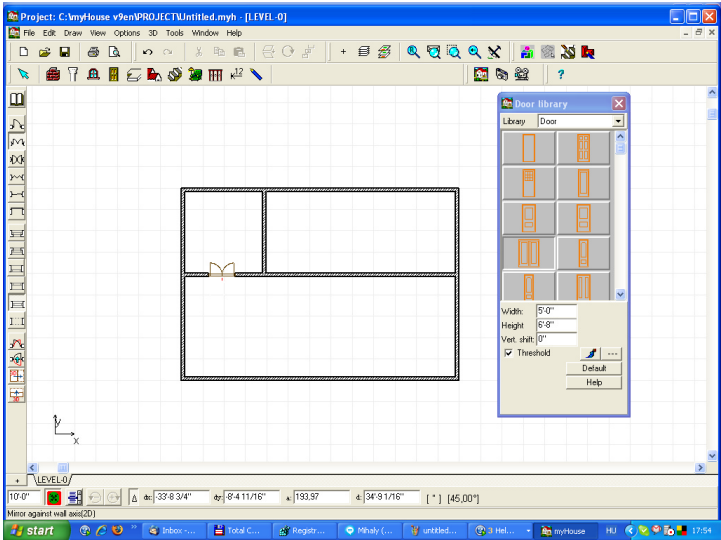


4.4 Draw doors


Select **Door** from the **Draw** menu. The **Door** library will open on the right-hand side of your drawing area. Click on **Door** in the **Door** library. Then, place the cursor on a wall in your design and click. A rectangle appears, representing a door. Move the cursor to slide the door along the wall and click again to anchor the door.

Repeat these steps as desired to place doors throughout your plan. If you want to use the same door style, it is not necessary to reselect it from the library. If you want to choose a different door style, select it from the door library and place it following the steps described above.

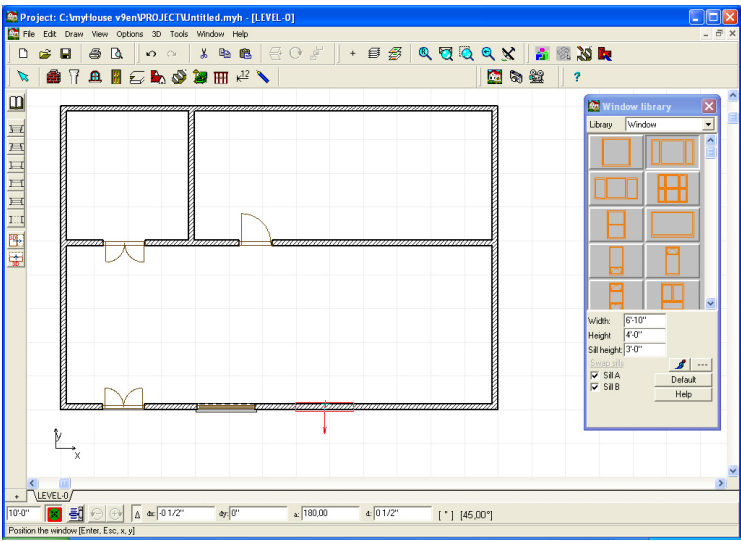
Note: To change the swing style of a door, click one of the secondary toolbar icons on the left while the door is highlighted on your screen.



4.5 Draw windows

Windows are placed much the same way as doors in myHouse. Select  icon or **Window** from the **Draw** menu. The **Window library** will open. Click on the window you want to place in your plan. Then, place the cursor on one of the exterior walls in your plan and click. A rectangle appears representing the window. Move the cursor to slide the window along the wall and click to anchor the window where desired.

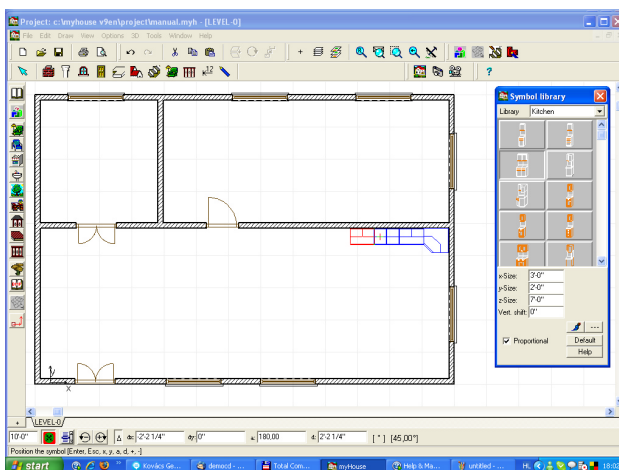
Keep placing windows so that your design resembles the one below.



4.6 Insert symbols



Select **Symbol** icon and drag the mouse to the right to open the library you want. For this tutorial, select **Kitchen**. The **Kitchen symbol library** will open. To place a symbol in your plan, click on the desired symbol and drag the highlighted outline of the symbol to where you want to place it. Click again to anchor the symbol. Once the symbol has been placed, the highlighted outline will remain. Click to enter the same symbol again or click the **Esc** or right mouse button to eliminate this outline.




Quick Start

You can also open up the symbol libraries by clicking the **Symbol** icon on the top toolbar, then clicking the desired library icon on the secondary toolbar that appears on the left-hand side of the drawing area.

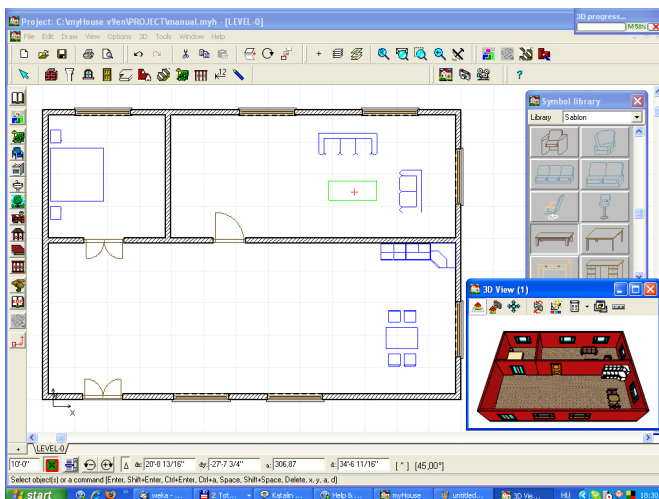
Note: To rotate a symbol, hit the “plus” or “minus” (+, -) keys on your keyboard or the rotate left or right icon while the symbol is highlighted in blue. To rotate a symbol that is already in your design, click the pointer icon, then click and hold the mouse button down on the symbol you want

to rotate. Hit the “+” or “-” keys or the   rotate left or right icon. Release the mouse button after the symbol has been rotated.


After placing your kitchen symbols, you are ready to place other symbols. You do not need to close the Kitchen symbols library to access the other symbol libraries. To open the other symbol libraries, click the  down arrow next to the library name. The other library choices will appear. Highlight the **SABLON** library and click to open it. Or, click the **SABLON** library icon on the secondary toolbar.


Select a table and rotate it, then place it in your plan. Next, select an appliance and place it in your kitchen. You can also add a recycling bin, ceiling fan, or other symbols from any of the other libraries to complete your design project.



Your resulting plan should be similar to the one shown on the next page, depending on what symbols you placed and where.




4.7 Add a roof

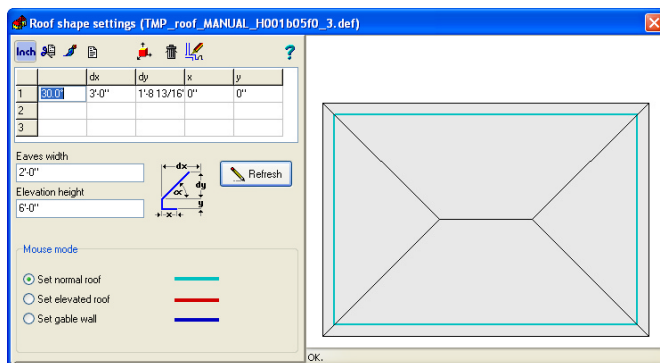
Select **Roof** from the **Draw** menu. Drag to the right and select **Roof** from the pop-up menu. Or, click the **Roof** icon on the top toolbar and then the  icon down on the secondary toolbar. The roof library will open. Select “**Roof 1A**” from the **Roof** library. A rectangle appears, representing the roof. Position the rectangle over the house and click the roof into place. Then, click the right mouse button to cancel the highlighted roof outline

Designing individual roofs . Let's design a simple roof. Use the **Automatic roof**

designer  feature for this. After clicking on this icon draw the shape of the roof – by closing in the polygon the roof designer automatically comes up. If you want to design a roof having an identical shape with the building itself, it is practical to make the software automatically generate it. You can initiate this by clicking the  icon and then left clicking at one of the (outer) walls of the building.

Note: If you do not want to use the automatic generation feature, use the  icon whereby you can define the polygon for yourself

The **Roof designer** module appears, with the top view representation of the roof.




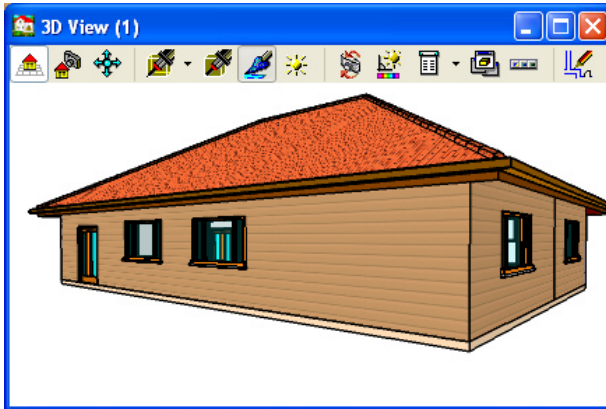
Roof Designer


4.8 Save your design



To save your myHouse plans, select **Save As** from the **File** menu. Give your plan a file name (for example: Tutorial). Click “Save.” Your project is now saved as “Tutorial.” To check this, select **Open** from the **File** menu. Your plan should be listed. Once your design is given a file name, you can save it automatically while working on it by pressing the “**F2**” key. It is a good idea to save your projects often.


4.9 View in 3D

One of the reasons for using myHouse is to view your plan in 3D. To view your plan in **3D** from the outside, select **External View** from the 3D menu. Or, click the  **3D-External View** icon.




This is a painted rendering of the exterior of your design. Your 3D views will default as  painted views but sometimes you may want different types of renderings.


myHouse will also perform  “**Wireframe**” and  “**Hidden-Line**” renderings simply by clicking the appropriate icon on the toolbar.

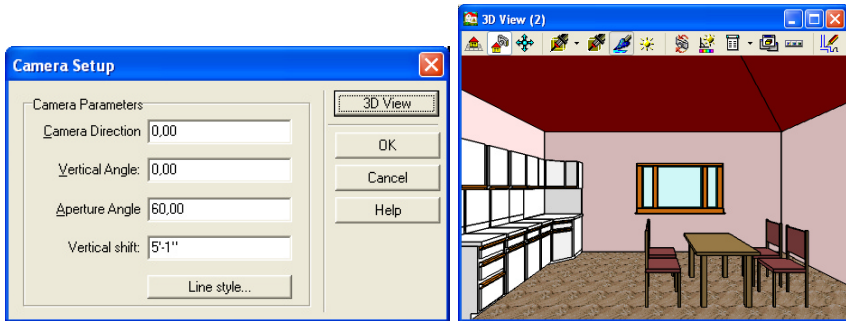
The icons of the 3D window may be removed (and put back) by right clicking on the icon bar and choosing between the icons or by the menu opening up after clicking on the  icon. The items marked with a small pipe are displayed in the icon row

To rotate your 3D view, click any one of the cameras in the upper-left hand corner of the screen. The 3D picture can be rotated or moved around by these icons, or by the mouse, including its scroll-wheel.


After viewing your design, you’ll want to return to the 2D view. To return to the 2D view, click the  Return to 2D icon.

Now, let’s view the plan in 3D from the inside. **Select Internal View** from the 3D

menu. Or, click the  **3D-Internal View** icon. A camera outline appears with your cursor, with its field of view indicated. Rotate the camera using the “+” and “-” keys or the rotate left or right icon on your keyboard. Position the camera so that it is inside the walls of the house in your plan. Imagine you are inside the building with the camera yourself and are looking for a specific angle from which to show the view. Position the camera to look at the table, for instance. When you have the desired position, click to anchor the camera. Double-click on the camera and select the **3D view**:

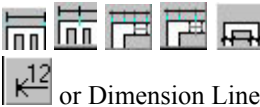


An **Internal View Parameters** window opens. This is where you would change the camera parameters from the defaults. You can change the height at which the “picture” is taken, as well as other camera parameters.


After viewing your design, return to 2D  to make any changes.


4.10 Add dimension lines

Most projects you create will need some type of dimensioning. myHouse lets you dimension automatically or manually. Both options will be outlined here.

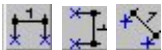


Automatic dimensions are used to dimension walls. Select


 or Dimension Lines from the Draw menu. Drag your cursor to the right and select

Automatic then  Overall. Or, click the Dimensioning icon on the top toolbar, then the second icon down on the secondary toolbar that appears on the left of the drawing screen.

Bring your crosshairs to the drawing area and click once on the wall you want to dimension. A blue line should appear on this wall. Next, click one endpoint of the dimension line and drag a line parallel to, and longer than, the wall you just highlighted. Once you have your line longer than the wall, click again to anchor the second endpoint. The length of the wall will automatically be given as shown below. Repeat this process for every exterior walls you want to dimension.





Manual dimensions are used to dimension the distance between any two points in your plan. The bottom three icons on the secondary toolbar are for manual dimensioning. Let's say we want to find out the distance between the table and

the nearest wall. Click the Manual dimension  horizontal line icon and bring your crosshairs to the drawing area. Click on the wall to anchor the first endpoint of the dimension line. Drag your crosshairs over and click on the edge of the table. You will then need to position the dimension line by moving your cursor left or right. When you have the dimension line in the desired position, click to anchor it.

Continue adding dimension lines as needed. You can experiment with the vertical or angled manual dimension lines by clicking on the appropriate icons on the secondary toolbar.

4.11 Add text

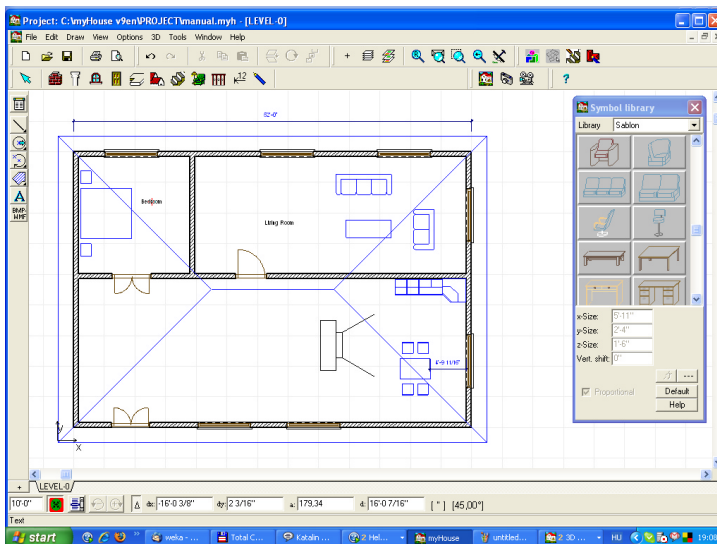
Like dimensioning, most myHouse projects will need some kind of text to describe the plan in further detail. To add text, select   **Text** from the Draw menu. A **Single Line Text** dialog box will appear. Type in the desired text and click “OK.” The dialog box will disappear. Position your cursor where you want the text.

Add additional text as needed to describe the individual rooms or symbols in the house. Also, add text to include the date and address of the house, or any other pertinent information so that it appears on any printouts.

Your completed plan should look somewhat similar to the one below.

Press the “**Ctrl F2**” key to save your project automatically.

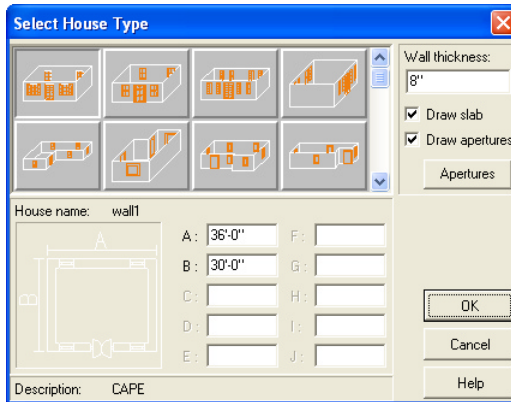
Congratulations! You have just completed your first project using myHouse. Now you’re ready to start your own home design or renovation from scratch. Simply select **New** from the **File** menu and you’re ready to go. You can even start with one of the house templates included in the program as described below.



4.12 QuickHouse

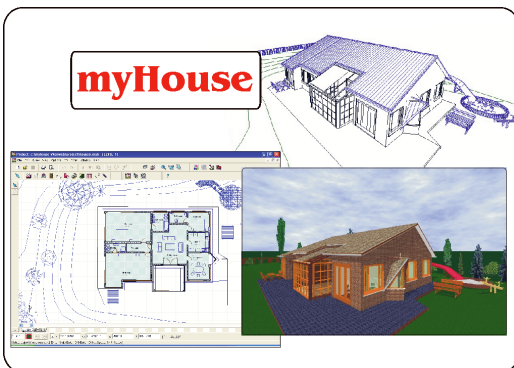
myHouse also contains a **QuickHouse** feature with over a dozen house and single room templates. You simply need to insert the correct wall dimensions and myHouse will draw the house or room shell for you. To access these templates, simply click the Wall icon on the top toolbar, then click the **House Type Library** icon on the top of the secondary toolbar that appears to the left of the drawing area.

The **Select House Type** dialog box will open. Simply select the type you desire and enter the new dimensions and click “OK.” Then anchor the house shell onto the **Drawing Area** by clicking it into place.



Chapter

V



5 Designs

This chapter outlines the steps for “drawing” building elements in your design. With myHouse, inserting elements such as doors into a 2D floorplan is simple. All that’s involved is a couple of clicks on menu items or icons, followed by a click or two in the drawing area to place and anchor the building element.

Besides the insertion of building elements, another part of creating a myHouse floorplan is modifying these elements - their placement, shape, rotation, height, color and so on. You can modify these elements either before you insert them or later, after they’ve been inserted, as you review your plan.


Remember that myHouse building elements include:

Structural elements such as walls, pillars, slabs, windows, doors, roofs, stairs, and rails. Appliances, furnishings, and landscaping elements commonly found in and around buildings and houses.

You can also draw 2D building elements with the Drawing Tools icon. Such custom symbols act as placeholders in the floorplan, reminding you of a specific type of element you plan to include. Because these custom elements will not appear in 3D, their creation is covered in the next chapter. You will, however, be able to use the 3D Modeler functionality of myHouse to create custom 3D symbols of your own that will appear in both 2D and 3D. This creation is covered in a separate chapter later in this manual.

5.1 Creating Building Elements

Each building element has default parameters. You can alter these parameters by

selecting  icon or **Default Values** from the **Options** menu, and dragging to the right to select either **Walls**, **Slabs**, **Columns**, or **Stairs**, etc.

5.1.1 Using the Keyboard to Enter Elements

When you’re experimenting or just sketching plans quickly, you’ll probably draw elements using the mouse. There’s nothing as fast and as easy as inserting a set of four walls with a couple of clicks and a slide of the mouse.

If you’re serious about creating a floorplan absolutely accurately, though, you’ll need to use a considerably greater level of care as you draw elements. For this accuracy, turn to the keyboard.

Designs

For example, let's use the keyboard to enter specific coordinates for the endpoints of a wall. Position the crosshairs where you want the first endpoint to be and click with the left key of the mouse or hit "Enter" This locks in the first endpoint. Next, hit "x" or "y" on the keyboard.

dx: 12'-0 13/13"	dy: -5' -0 3/8"	z: 283.30	d: 52'-5 - /4"
------------------	-----------------	-----------	----------------

Type 13' in the "dx" box and hit "Enter." Now, **without moving your mouse**, hit "Enter" again to lock in the second endpoint 13' away from the first endpoint.

You can experiment by entering different values in either the "dx" or "dy" boxes in the Coordinates lines.

Note: Using negative values in the "dx" or "dy" numbers will draw the wall to the left or down. Use Tab key to go into the next field.

Or, you can use the arrow keys on your keyboard to create walls. Position the crosshairs where you want the first endpoint to be. Hold "Shift" down and press your arrow key in the direction you want to go. You'll notice the wall is created in 1' increments. Release the "Shift" button and you'll notice the wall is created in 1" or 1/16" increments when you press the arrow keys. Hit "Enter" when you have the wall the length you desire.

Note: For creating walls down to the 1/16", press the "F3" key after anchoring the first endpoint. "F3" toggles between 1" and 1/16" increments.

The keyboard is also used to control symbol rotation. Pressing the "+" or "-" keys before the symbol has been anchored into place, rotates the symbol by 45 degrees.

Note: To rotate symbols in increments of 5 degrees, press the "Shift F3" key or the rotation angle icon before rotating. "Shift F3" or click on the

[45.00°]





texts acts as a toggle between 45 degrees and 5 degrees.

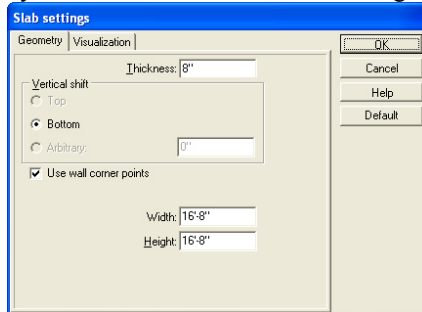
5.1.2 Slabs

If you are either starting a design or creating a ceiling for a single story building, slabs are the place to be. Slabs serve as both floors and ceilings. Floors of upper levels are the ceilings of the lower level. If you did not place a slab between two levels, you would have a cathedral ceiling for the lower level.

Note: Slabs can also be used as shelves, counters, and beams for ceilings. Simply modify the length, width, and vertical shift as needed.

In the list of steps below, you can modify the slab parameters before you create it. Or, you can just draw the slab now and modify it later.

1. Select  icon or Slab from the Draw menu. Drag the mouse to the right and select Rectangle,  Polygon or  Automatic slab icon.
2. Optional: Modify the slab before you enter it. After clicking the Slab icon, secondary slab icons will appear on the left of the drawing area. This is the secondary toolbar. To change the slabs parameters, click the  top icon on the secondary toolbar. Click this icon to change the thickness, vertical shift, or surface properties of the slab you're about to draw. The following dialog box will open.




Slab dialog box

The dialog box shown is for the Rectangle Slab Settings.

Thickness: Change this value to change the thickness of the slab.

Width and Width: These parameters appear only for rectangular slabs. These values define the initial lengths of the slab's sides. Change these values if you're going to use your keyboard to enter the slab into your floorplan. If you're going to use your mouse, leave these values alone.



Vertical Shift--Arbitrary: Change this parameter if you need to change the distance a slab will be from the ground. For example, if you have a split-level building in your design. If not, Select the  **Bottom/Top** or leave this value as "0" as the slab will automatically be placed as the floor.

Visualization: This is where you define what surface type you want. Click the corresponding color tile for "Top", "Side" or "Bottom side" to add textures to your slab. These textures will show in 3D.

Click "OK" when you have made all the changes you desire.

3. Now, let's draw the slab. Click in the drawing window to anchor one corner of the slab. Drag the cursor, or use the arrow keys, to create the size slab you desire and click to anchor the opposite corner.


For a Polygon slab, click to enter the first point and move the cursor to the second corner and click to anchor it. Continue with as many corners as you need to complete


your slab. To close your slab, click on the first cornerpoint again.


To create a split - level building, use two or more slabs in the same level. Change the Vertical Shift in the Slab dialog box to control the distance you need that slab shifted. Select the Arbitrary and Enter a positive value to shift the slab up and a negative value to shift the slab down. Or, you can make the higher slab thicker. Connect these two slabs with a set of stairs.

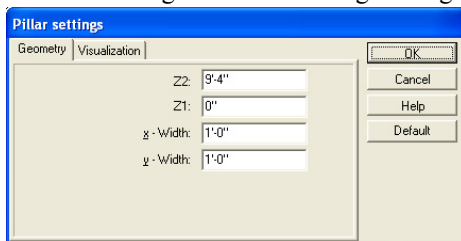
5.1.3 Columns

Columns can be used to create many different items in myHouse. Use Columns if you need beams, pillars, footings, etc. To enter a column into your design, follow the steps below.

1. Select  icon or **Column** from the **Draw** menu. Drag your mouse to the right and select one of the three style choices, **Rectangle**, **Circle**, or **Polygon**. Or, click the Column icon.
2. For rectangle and circle columns, a colored outline will appear with your cursor. Click to anchor the column in your design. Enter as many as you like. Then, click the right mouse button or press “Esc” to escape the column creation function.

For a  polygonal column, move the cursor to the location of one of the column's cornerpoints and click. Continue to mark other cornerpoints by clicking. Close the column by double-clicking at the last point or clicking at the original cornerpoint.

3. To change the default settings for any column style, click the  icon at the top of the secondary toolbar before inserting the column. The Column Settings dialog box will open. The Rectangle Column Settings dialog box is shown here.



Pillar settings






Z1, Z2: Change this value to change the height of the column.

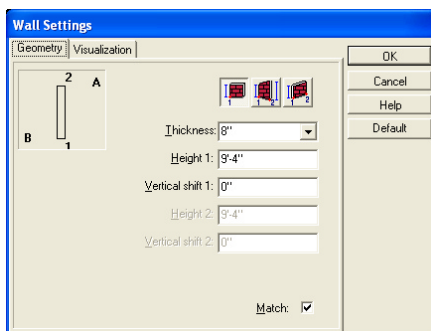
Visualization/Surface Properties: Click the color tile to choose a surface texture for your column. Any change made here will appear in 3D renderings.

5.1.4 Walls

Walls are created much the same way, whether they are the external walls of a building or the walls of a room inside the building.

To create a wall:

1. Select **Wall** from the **Draw** menu and drag your mouse to the right to select the style of wall you want to create. Or, click the  wall icon, then the corresponding icon from the secondary toolbar that appears on the left. You can draw  a single wall,  a rectangle of walls,  polygon of walls, or  curved walls.
2. Optional: Modify the wall before you enter it. After selecting the wall style you want, click the Current Wall Parameters icon on the secondary toolbar to open the Wall Settings dialog box.



Wall Settings

Thickness: Change this value to change the thickness of the wall.

Height1, Height2: Change this value to change the height of the wall.

Vertical Shift 1, Vertical Shift 2: Change this parameter to change the distance the bottom of the wall is from the floor. Most of the time you should leave this value as “0”.

Match: With this option checked, drawing a wall endpoint close to an existing wall will cause it to snap to the existing wall.

Visualization: Click on the color tile corresponding to what side you want to add surface color or textures. Choose the texture you want from the box that opens and click “OK.” These textures will show in 3D.

Click “OK” when you have made all the changes you desire.

3. Now, let’s draw the wall(s). Click to anchor the first endpoint of the wall. To finish the wall, follow the directions below for each wall type. A corresponding icon for each type is on the secondary toolbar.



Single Wall: Move the mouse to set the wall’s length and click to anchor the second endpoint. Pressing “Spacebar” before anchoring the second endpoint will flip the wall being drawn to the other side of your crosshairs. By default, single walls can only be drawn at 90 degree angles. To draw walls at any

other angle, select **Ortho** from the **Options** menu.



Rectangle: Drag and click to anchor the opposite corner of the set of four walls.



Polygon: Move the mouse to the second endpoint of the first wall segment and click to anchor it. That second endpoint now serves as the first end-point of the second segment of wall. Move the mouse to create the second segment and click to anchor the second endpoint of the second segment of wall. Continue in this fashion. When you have all the desired walls, click the right mouse button to escape. To draw segments at different angles, select **Ortho** from the **Options** menu.



Curved: Move the mouse away from the first anchored point and click. A “rubber line” is attached to the anchored points. Move the mouse to make the curve longer and the arc greater or lesser. Click to anchor the curved wall. Here you can press the **right button** of the mouse and can select the **Radius Determination** menu. A dialog box appears and you can define the radius and central angle of the curved wall.

To create walls using the keyboard, follow the instructions earlier in this chapter.

Note: Besides clicking and moving the mouse to insert a wall, you can manually enter specific coordinate values for that element. For example, let's say you have clicked the mouse to anchor one endpoint of a wall. Now, hit the “X” or “Y” key on your keyboard. The dialog box appears, type a value for one or both coordinates and hit “Enter.” The dialog box disappears and the wall is drawn to the dimensions you chose.

Walls can be modified in many ways. The bottom four icons on the Secondary Wall Toolbar are the following:



Merge walls



Unmerge walls




Cut from wall





Build from lines or curves

5.1.5 Doors, Windows

With doors, choose one from the Door library (each door in the library has a type ID number). To enter a door, follow these steps:


1. Select **Door** from the **Draw** menu or click the  Door icon. The Door library will open.
2. Select the door you want to insert into your design by clicking on it. Change the height or width of the door and add a threshold if you want at the bottom of the Door library. Hit “Enter” after you make a change to the door’s parameters. Click on the wall where you want the door to be. Move the rectangle that appears with your mouse until you are satisfied with the location of the door (or press X or Y and define the location of the door by typing the value) the and click to anchor it. The door swing

will be in blue. Using the   icons on the secondary toolbar, you can change the swing of the door. Click on any of the icons described below to change the swing or appearance of the door in your plan while it is blue. Once you have the desired door appearance, click anywhere else in the drawing area to turn the door swing black.

5.1.6 Stairs

Many stair styles are possible with myHouse. You can create a straight set of stairs, which is the default, or stairs that are U or L shaped. With the help of the Stair Designer, you can even create circular and other custom stair- cases.

Create stairs in the level from which they originate. To create a straight set of stairs, follow the steps below.

1. Select **Stairs** from the **Draw** menu and drag to the right to select **Stairs** icon. Or, click the  Stairs icon.
2. Select one of the stair icons:




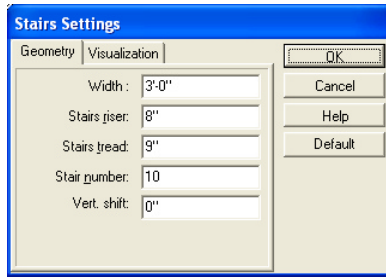
Stairs icon-straight flights



Stair Designer icon-straight, winding and curved flights

3. If you select the  Stairs icon-straight flights:

Click the Current Stairs Parameters  icon on the secondary toolbar. This will open the Stair Settings dialog box.



Stairs settings

Change these values as needed. When you have made all the necessary changes, click “OK.”

Width: Change this value to change the width of the staircase.

Stairs Riser: Change this value to change the height of each individual stair.

Stairs Tread: Change this value to change the length of each stair.

Stair Number: Enter the number of stairs you need.

Vertical Shift: Change this value to control the stair shift. This value indicates the distance from the bottom stair to the floor of the current level.

Visualization/Surface Properties: Click this color tile to add a surface texture to your set of stairs. Choose the texture from the window that opens.


Note: Multiply the number of stairs by the stair riser value to calculate the height of the staircase. In most cases with a straight staircase, this value should equal your wall height.

Again, once all your changes have been made, click “OK.”

- Click the Stairs icon on the secondary toolbar to select the stairs you just created. Position the staircase in your drawing area, rotate it as needed by pressing the “+” or “-” keys, then click it into place.

Note: The arrow on a set of stairs points to the top of the stairs.




- If you select the  Stair Designer icon—straight, winding and curved flights icon: The program gives you the opportunity to design stairs. Click on the icon to call the *Stair Designer*. After starting the program, the Stair Designer appears. However, the program contains a very efficient *automatic Stair Designer* method which you would use in most cases.

In the automatic stair-generating window, you may enter all the stair data such as: flight width, flight type (straight, drawn or arched), etc. the dimensions for each step. There is a multi-window dialog box for every flight where you can define the stair balusters, the individual stair data, the stair landing, the dimensions of stair rails. You may enter several data in the different windows. To switch to

different windows, click on the small tabs where their names are shown. (See the Stair Designer manual)

5.1.7 Rails

Rails can be placed on stairs or anywhere else you might find them. To enter rails, follow the steps below.


1. Select **Rail** from the **Draw** menu. Or, click the  Rail icon on the primary toolbar or on the secondary toolbar of the Stairs.
2. Select a rail from the library that opens. You can modify the rail before you enter it by changing the height and vertical shift in the library window. Hit “Enter” after you make a change.
3. Click on the first endpoint for the rail, which is usually at one end of a set of stairs. A “rubber line” follows the cursor as you move it to the other endpoint. Click to anchor that second endpoint.

By default, you can create another rail. Click the right mouse button (or press “Esc”) to escape the rail drawing process. The rail will appear as a heavy, colored line and will automatically follow up and down the stairs.

5.1.8 Symbols

Symbols in myHouse are grouped into a lot of different libraries. You can also create your own 3D symbols and custom libraries using the 3D Modeler.

To insert a symbol into your design, follow these steps:

1. Select **Symbol** from the **Draw** menu and drag your mouse to the right to select one of the symbol libraries. Or, click the  Symbol icon on the primary toolbar. The secondary toolbar will appear to the left of the drawing area. Click any of these icons to open the corresponding symbol library.
2. The symbol library you chose opens in the Symbol Library dialog box, one example is shown here. Simply scroll through the library to find the symbol you want and click on it.
3. Optional: Modify the symbol before you enter it. In the dialog box, you can change the symbol’s size, color (surface), and shift.

x-Size, y-Size, z-Size: The **x** size is the symbol’s width. The **y** size is the symbol’s length. The **z** size is the symbol’s height. Change these values as needed.

Proportional: Switch on/off

Vertical Shift: This is the distance the symbol will be placed off the floor. For example, to place kitchen cabinets halfway up a wall, you should change this value.

Also, be sure to change this value if you are placing one symbol on top of another. For example, to place a lamp on a table, notice the height of the table when you place it. Then set the vertical shift value for the lamp to be the

height (z-size) of the table.



Surface: Click here to change the color or surface texture of the symbol.

Line type: Click here to change the line style (style, thickness, color,) of the symbol on the 2D floorplan.

4. Reselect the symbol once all the desired changes have been made. You'll have a colored outline of the symbol follow your cursor. Position the outline where you want the symbol to be in your plan. Rotate it by pressing the "+" or "-" keys on your keyboard. Click to anchor the symbol.

The colored outline will stay with the cursor after you place the symbol. Click the right mouse button to get rid of this outline, or click the left mouse button to place this same symbol again.

5. Optional: Select a different symbol from the same library or change libraries by clicking the down arrow next to the library name at the top of the Symbol Library dialog box.

5.1.8.1 Photo Library

Choose the photo library by pressing the last icon of symbol libraries. A photo that you place in myHouse's 3D rendering will be placed only as a plane that will be rotated along with the building. Therefore you should place the photo into the proper position in 2D, using the "+" or "-" keys on your keyboard.

You can also create your own photo symbols and add them to the library using the Options/Default Value/Photo Symbol command. Use the New Library button to create your own photo library. Then press the Browse button to select and the Add button to add the .BMP file to the library. Using the Select 2D button, you can also add a 2D symbol for your floor plan. Next, add a Description to the file using the Description... button or (optionally) resize the picture with the Size button. Finally, you can delete the selected symbol from your library with the Delete button.

Note: In order for the photo symbol background not to be visible in the 3D painted pictures, it must be black. If the background is black, then only the desired fore-ground part of the photo symbol will appear in the 3D painted pictures.

5.1.9 Roofs, Chimneys, Skylights, Dormers



Automatic Roof Designer icon

myHouse contains a number of pre-defined roofs for the buildings in your designs. You insert roofs into your plan much the same way as you insert other symbols. Also, custom roofs can be built using the Roof Designer.

To insert a **Roof**, follow these steps:

1. If necessary, open the top level of your plan. The roof will automatically snap to the top of the current level.
2. Select **Roof** from the **Draw** menu and click on **Roof** from the menu that opens when you drag your mouse to the right. Or, click the Roof icon on the primary toolbar then click the top icon on the secondary toolbar that appears to the left of the drawing area. This will open the Roof Library dialog box.
3. Select the roof style you want from the library.
4. Optional: Modify the roof before you enter it. In the dialog box, you can change the roof's length, width, pitch, and surface properties.

x-size, y-size, z-size: The x size is the roof's width. The y size is the roof's length, and the z size is the roof's height. Change these values to change the size of the roof.

Note: Changing the z size of a roof symbol changes the pitch of the roof.

Vert. Shift: Roofs will automatically snap to the top of the level you are on. Change this value only if you want a non-standard placement of the roof.



Surface: Click here to change the color or surface texture of the roof.

5. Once all the desired changes have been made, position the roof in the design and click to anchor it. Remember, you can rotate the roof like any other symbol. The colored outline will remain until you click the right mouse button or press "Esc."

Note: Roofs are automatically sized to fit the main building in your plan. Change the x, y, and z, values as needed before placing any non-standard roof.



To insert a **Chimney**, follow these steps after you have inserted a roof.

1. Click the Chimney Library icon on the secondary toolbar after clicking the Roof icon.
2. Select the chimney style you want from the library box that opens.
3. Position the chimney in your plan and click to anchor it. Click your right mouse

button to eliminate the colored outline that moves with your cursor.

Note: Unless the Shift value is changed, chimneys, skylights, and dormers will automatically snap to the top of the roof.


4. Optional: Modify the chimney before you enter it.

x-size, y-size, z-size: Change these values to change the length, width, and height of the chimney just like you would any other symbol.

Shift: Change this value if you do not want your chimney to snap to the top of the roof. This is the distance the chimney will be off the floor.


Surface: Click here to change the color or surface texture of the chimney.



To insert a  **Skylight**, follow these steps after you have inserted a roof.

1. Click the Skylight Library icon on the secondary toolbar after clicking the Roof icon on the primary toolbar.
2. Select the skylight you want from the library by clicking on it.
3. Position the skylight where you need it in your plan and click to anchor it. Rotate the skylight with your “+” or “-” keys before anchoring it. Click the right mouse button to escape the skylight creation process when you have entered all the skylights you need.
4. Optional: Modify the skylight before you insert it.




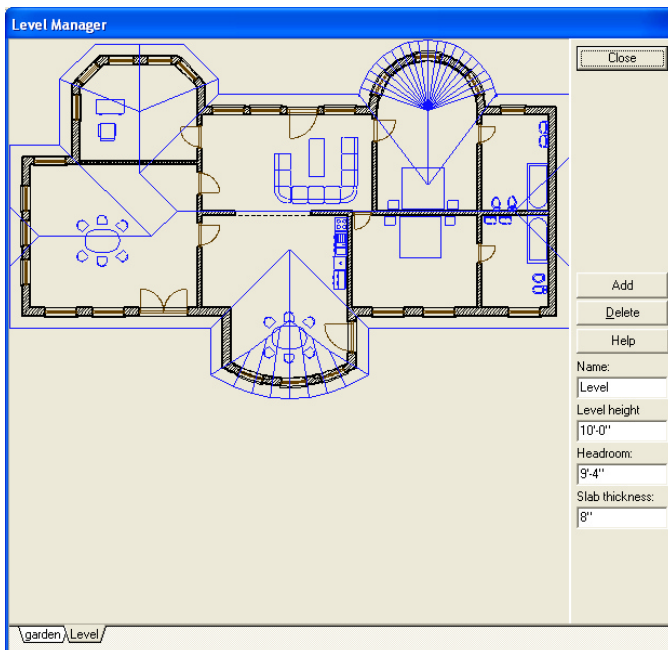
To insert a  **Dormer**, follow these steps after you have inserted a roof.

1. Click the Dormer Library icon on the secondary toolbar after clicking the Roof icon on the primary toolbar.
2. Select the dormer you want from the library by clicking on it.
3. Position the dormer where you need it in your plan and click to anchor it. Rotate the dormer with your “+” or “-” keys before anchoring it. Click the right mouse button to escape the dormer creation process when you have entered all the dormers you need.
4. Optional: Modify the dormer before you insert it.

5.2 Creating Multiple Stories

The terms “story,” “level,” and “floor” are synonymous in myHouse. To create a design that has more than one story, or level, you open more than one window in a project, one for each story. This is a simple procedure thanks to the exclusive Level Manager in myHouse.

To open up the Level Manager, select  icon or Level from the View menu. The following window will open.



Level Manager

A small example floorplan is shown in the window.

Add level: Click on this button to add a new floor, or story, to a plan. Choose whether you want to copy the current level or leave it empty and where you want the new level to be. Click “OK” to add the new level.

Delete: Remove level Click on this button to delete the current level.

Level Height: This is the height of the current level, or story. Change this value to the height of the tallest wall in the story if you have changed any of the wall heights.

Headroom: The default value here is the default height of a wall.

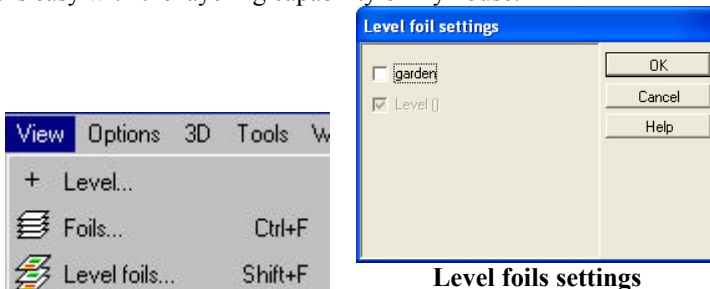
Slab thickness: Level height= Headroom + Slab thickness

Name: You can name each individual level in *myHouse*. Changing the name here will change the name of the level on the level tab at the bottom of the dialog box.

Note: To switch levels in a multi-level design, click on the desired level tab at the bottom of the Drawing Area.

5.2.1 Using Layering to Align Levels

As you begin to work with a new story, or level, in a building, one of your first questions will be, “How do I align a new level with the one above or below?” Such alignment is easy with the layering capability of myHouse.



Level foils settings

Make the new level the current one by clicking it's level tab at the bottom of the drawing area. Next, select Level Foils from the View menu. Select the level you wish to view by clicking it, then click “Close.” All the walls in that level will appear in color on the current level. You can now create your walls by tracing them over the colored ones of the other level to ensure that your levels align themselves properly.

5.3 Modifying Building Elements

Common Windows editing commands are available in myHouse. Two common editing procedures - select and move - are described here. In addition, specific information about each building element is provided in this section.



Select: The first step in modifying elements is to select an element or elements. Generally, when a building element is selected, it changes color. (A colored line appears inside walls to show that they are selected.)



Select an object by clicking the Selection Tool icon, then by clicking on that element. You can select a group of elements by drawing a box around the group of elements desired. Or, choose Select All from the Edit menu to select all the elements in the design.

Note: To select an element that is on top of another element, click the Selection Tool icon and click on the element. Then, press the Spacebar. Pressing Spacebar toggles between overlapping elements.

As you perform an operation, a colored outline of the symbol (or a line, in the case of a wall) indicates the effect of this operation. In other words, if you select a wall and move one end of it by dragging the cursor, a colored line representing the wall moves with the cursor. Only when you click to anchor the new position of the wall's endpoint does the wall itself move.

Move: Once you have selected an element, the easiest way to move it to a new location is by dragging that element. Click and hold the mouse button down while dragging the element. Once you have the element in the new desired location, release the mouse button. If, while dragging, you cannot drag at an angle, select **Ortho** from the **Options** menu.

You can also move objects using the button. When the objects are selected press the button and use the cursor arrow keys to move them in 1" or 1cm steps (Shift f+ 1/16", 1mm). Hold down the Shift key to move the objects in 1' or 1m steps.





5.3.1 Slabs

You can modify a slab in the following ways:

1. **Move it:** Select the slab, place the cursor anywhere on the slab, and drag it to the new location.
2. **Change its parameters:** Double-click on the selected slab to open the Slab

5.3.2 Walls

You can modify a wall or set of walls in the following ways:

1. **Move it:** Select the wall. If you click and drag in the middle of a single wall, the entire wall moves. If you click and drag on one end of a free-standing wall, only that end moves and the other end stays anchored. The cursor will become a circle when you can modify this way.
2. **Change the shape:** Select a wall, click on one of its endpoints or on a cornerpoint where walls join, and drag the endpoint or cornerpoint to a new location. You can turn a rectangular set of walls into a polygon in this fashion.
3. **Change its parameters:** Double-click on a selected wall to open the Wall Settings dialog box. Make the desired changes and click "OK."
4.  **Adjust a wall junction:** Click on the intersection of the two walls that are not matched. The walls are automatically redrawn as a single building element.  Unmerge walls.
5.  **Cut a wall:** Select **Edit Wall** from the **Edit** menu and click **Cut Wall** in the pop-up menu. Or, click the Wall icon, then the icon on the secondary toolbar that controls this feature. Click at the point in the wall where you want one edge of the cut. Move the cursor to the other end of the cut and click. The wall will be redrawn with the cut shown.
6.  **Turn a line into a wall:** Click on the Wall icon to open the secondary wall toolbar. Select the line and then click on the Build Walls From Lines or Curves icon on the secondary toolbar.

5.3.3 Doors, Windows

You can modify a door in the following ways:

1. **Move it:** Select a door, click on it and drag it to a new location on the same wall.
2. **Change its parameters or type:** Double-click on a selected door to open the Door library. Choose a new door style or change its height and width. Press “Enter” after you make your changes.
3. **Change the swing, etc. :** Select a door. Then, while it is selected, click one of the icons on the secondary toolbar to change its swing, etc.
4. **Add or delete a threshold, sill:** Double-click on a selected door to open the Door library. Click on the Threshold or Sill checkbox to add or delete a threshold or sill in that door or windows.

5.3.4 Stairs

You can modify a set of stairs in the following ways. Be sure to double-check any changes you make. You could make changes that result in the stairs either exceeding or failing to reach the next level. Also, note that when you select a set of stairs, it is marked by handles as well as a colored outline.

This section also contains instructions on creating a U or L shaped staircase.

1. **Move it:** Select the set of stairs, click on it, and drag the stairs to the new location.
2. **Change its parameters:** You can change the size of a staircase by dragging the handles of a selected staircase. Or, double-click on the selected set of stairs. Change the parameters as needed in the Stairs Setting dialog box that opens.
3. **Add rails:** For instructions on creating rails, refer to the section on **Rails** earlier in this chapter.
4. **Connect flights of stairs with a landing:** To insert a landing in a set of stairs, you need to think of the sets of stairs on either side of the landing as separate segments.

Create a new set of stairs as described earlier in this chapter. Click on the Landing icon on the secondary toolbar. A colored outline of the landing will appear. Position this landing at the top of the stairs. Click to anchor it.

Insert another segment of stairs. The Vertical Shift value for this set should equal the height of the first set of stairs plus the landing. The bottom of this set should be attached to the landing.

You can create different stair shapes by putting together different shaped landings and stair segments of various lengths. The following picture is a close up of an “L” shaped staircase.

5.3.5 Rails

You can modify a rail in the following ways:

1. **Move it:** Select the rail, click on it, and drag it to a new location.
2. **Change its length with the mouse:** Click on one end of the rail and drag the cursor to lengthen or shorten it.
3. **Change its parameters:** Double-click on a selected rail to open the Rail library. Press “Enter” after making the necessary changes.

5.3.6 Symbols

You can modify a symbol in the following ways:

1. **Move it:** Select the symbol, click on it, and drag it to a new location.
2. **Change its parameters:** Double-click a selected symbol to open the Symbol library. Change its parameters as needed and press “Enter” after you’ve made all the necessary changes.
3. **Turn it into a different symbol:** Double-click a selected symbol to open the symbol library. Select a new symbol from the library.

5.3.7 Roofs

You can modify a roof in the following ways:

1. **Move it:** Select the roof, click on it, and drag it to a new location.
2. **Change its parameters:** Double-click a selected roof to open the Roof library. Press “Enter” after making the necessary changes.
3. **Add elements:** To add skylights, dormers, or chimneys, see the Roof section earlier in this chapter.

5.3.8 Columns

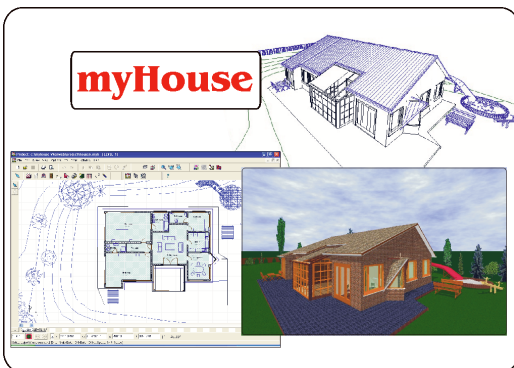
You can modify a column in the following ways:

1. **Move it:** Select the column, click on it, and drag it to a new location.
2. **Change its parameters:** Double-click a selected column to open the Column Settings dialog box. Press “Enter” after making the necessary changes.
3. **Change shapes:** The best way to change the shape of a column is to delete the current one and create a new column of the desired shape.

Note: To rotate a symbol, roof, column, or set of stairs after they have been anchored; Select the desired element and press the “+” or “-” keys while holding the mouse button down.

Chapter

VI




6 Enhancements

This chapter describes various ways of enhancing your myHouse design. For example, you can draw “primitives” to enhance your plan, or insert dimension lines to note distances. Text can also be added to put notes right on the plan. Lastly, this chapter will describe the automatic Bill of Materials.

6.1 Drawing Primitives

Primitives are used for many reasons in myHouse. You can draw a circle to represent a symbol, draw a line to point out important aspects, measuring area, or add text to make the plan easier to understand.

Note: Primitives will not be viewable in 3D. To draw custom symbols that will be viewed in 3D, use the 3D Modeler as described later in this manual.

To draw a primitive, click the  Drawing Tools icon. The secondary toolbar will open which allows you to choose what style primitive you want to draw. The steps involved in drawing each primitive are outlined below.



Draw a line: In the drawing window, click to anchor one endpoint and move the cursor to where you want the line to end. Click to anchor the second endpoint.



Draw a polyline: Click to anchor the endpoint of the first segment, move the cursor and click again to anchor the second endpoint. Move the cursor in a new direction and click to anchor the next endpoint. Continue as long as you need to. Click the right mouse button to escape this drawing process.



Draw a rectangle: Click to anchor one cornerpoint. Move the cursor to the opposite cornerpoint and click to anchor that corner



Draw a circle based on center and radius: Click to anchor the center of the circle. Move the cursor away from the center point and click to anchor the circle.



Draw a circle based on 3 points: Click to select the first point, and again to select the second. Move the cursor and define the size of your circle by clicking in the third point.



Draw an arc based on center, radius, and angle: Click to anchor the center of the circle. Now, click on a point along the circumference. This point will serve as the endpoint for the arc. Then, move the cursor up or down to draw the arc. Click when you have the length arc you desire.



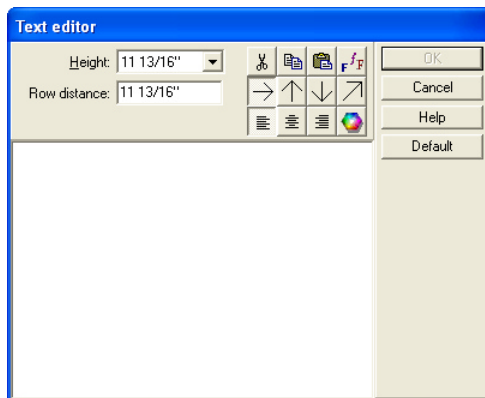
Draw an arc based on 3 points: The arc is defined by three anchored points. Click to anchor all three points.



Fill area



Text: Click the Insert Text icon. A Single Line Text dialog box appears.



Text settings

In the text field, enter the word(s) you want to add to your floorplan. Change the default height of the text if you desire. Click “OK” when finished. Select the

text direction:



Click the point at which you want the text phrase to begin. Draw a line by moving the cursor to the right away from the anchored point. Click again to insert the text.

If your text is in the wrong place, select it and drag it to the new location. A colored box will surround the text when it is selected.



Bitmap symbols: For additional flexibility, myHouse lets you insert BMP, JPG, EMF, WMF files into your design. Simply select Bitmap symbols from the Draw menu and browse the files. Once you have located the file you want, set the scale, density, width, and height and then place it in your design.

6.2 Drawing Dimension Lines

Dimension lines are used to show distances between identified points in your plan. myHouse gives you many options for dimension lines. You can place them inside or outside a floorplan, you can choose from a variety of styles, and you can have them drawn manually or automatically.

To draw a dimension line, select Dimension Line from the Draw menu. Then, select Automatic or Manual. If you select Automatic, the dimension line will change automatically if you later change the length of a wall.

There are five options for Automatic and three options for Manual. They are accessed by clicking the pop-up menu that appears. They are also accessible by clicking the corresponding icon on the secondary toolbar after clicking the Dimensioning icon.



Overall automatic - Drawing an exterior overall dimension line: Use this option to measure walls. Select the wall you want to dimension. Click to anchor one endpoint of the dimension line and move the cursor to draw a line parallel to, and at least as long as, the wall you selected. Click to anchor the second endpoint. The dimension line will appear.



Detailed automatic - Drawing an exterior detailed dimension line: This option provides a detailed measurement of a wall, broken among endpoints, windows, and doors. Select the wall and follow the directions for Overall automatic.



Internal automatic - Drawing an interior dimension line: Use this option to make internal measurements such as the width of a wall or the internal dimension of a room. Click the endpoints of the line across the space you want to measure. The dimension line will appear.



Horizontal manual: Use this option to draw a horizontal dimension line. Click one endpoint of the line, move the cursor to draw a line horizontally and click to anchor the second endpoint. Move the cursor up or down and click to position the dimension line. The dimension line will appear.



Vertical manual: Use this option to draw a vertical dimension line. Click to anchor one endpoint of the line, move the cursor to draw a line vertically and click to anchor the second endpoint. Move the cursor left or right and click to position the dimension line. The dimension line will appear.



Angled manual: Use this option to draw an angled dimension line. Click to anchor one endpoint of the line, move the cursor to draw a line and click to anchor the second endpoint. Move the cursor left or right and click to position the dimension line. The dimension line will appear.



Measuring areas

Note: Use the Manual dimension lines to dimension anything other than the length of a wall. For wall lengths, use the Automatic dimension lines.

6.3 Measuring Areas

To measure an area in myHouse, select Measure Area from the Draw menu or select their icons.



Click to a closed by walls area to be measured.



Click to anchor the corners of the area to be measured.

Now, as you move the crosshairs, a “rubber line” is attached. Click to anchor the next corner of the area. Continue until you are back to the original corner. If you can only draw the lines at 90 degree angles, select Ortho from the Options menu.

Once you close the area, the Single Line Text dialog box will appear with the size of the area you have defined already entered. Click “OK.”

Settings of measured area

Insert the area size label the same way you would ordinary text. Click where you want the text to be.

6.4 Modifying Dimension Lines

You can modify dimension lines in the following ways:

1. **Move it:** For automatic lines only, click and drag a selected dimension line to a new location. You will not change the measurement itself.
2. **Change its length:** For automatic lines only, increase or decrease the length of a dimensioned wall. The dimension line adjusts to these changes.
3. **Changes its parameters:** You can also make other changes to all the new dimension lines you will draw. Select **Dimension Settings** from the **Options** menu. The Dimension Line dialog box will appear. Each option is described below.

Style: Select one choice from this list to represent the tick marks on the dimension lines.

Text Position: Select one option from each group to represent where text will appear in relation to the line.

Automatic Dimensioning: Select the point on the doors and windows that is to

be used to measure the distances between wall endpoints, doors, and windows. This option applies to Detailed lines only.

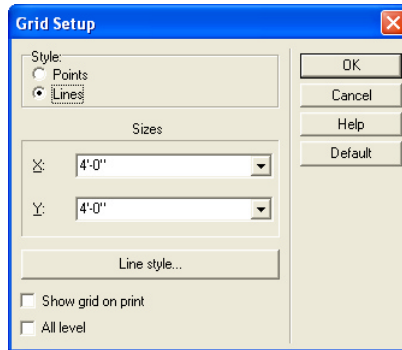
Distance: Specifies the distance between the text and the dimension line.

Text Height: Specifies the height of the text.

Click “OK” after you have made all the desired changes. These changes will not be saved when you exit *myHouse*.

6.5 Using Grids

myHouse uses a snap-to grid system in the drawing window to increase the speed with which designs are drawn and improve the accuracy with which design elements are placed. Elements can be snapped to a close gridpoint. To disable snap, select **Snap** from the **Options** menu and click “Enable snap” in the Snap Settings dialog box so the check mark disappears. You can also change the distance with which design elements will be snapped to a close gridpoint by increasing the number of Pixels. Select **Change Grid** from the **Options** menu to open the Grid dialog box.

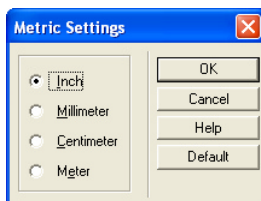


Grid Setup

Here is where you change the size of the grid or determine whether you want the grid to be visible like a point or line in the level you’re working on, or on all levels. You can also toggle between a visible and nonvisible grid by selecting **Grid** from the **View** menu.

6.6 Changing Units

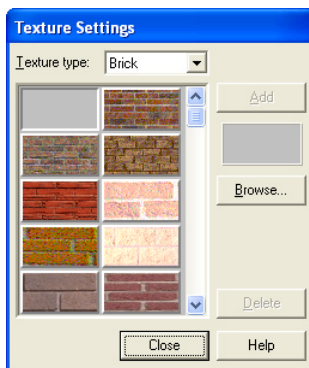
myHouse also lets you create your design using Metric measurements. To change to the Metric system, select **Change Unit** from the **Options** menu. These changes will not be saved when you exit *myHouse*.



Metric Settings

6.7 Texture setting

You can insert new textures into the library using the **Options/Textures Settings** command. Press **Texture type** to select the type, then the **Browse** and **Add** buttons to locate and add a BMP file to the library. You can delete the selected symbol from your library with the **Delete** button.



Texture settings

6.8 Bill of Materials

myHouse automatically generates a catalog of everything you place in your design. To open up the Bill of Materials for the plan you are currently working on, select Bill of Materials from the File menu.

Below is an example of an automatic bill of materials.

The Bill of Materials is in spreadsheet format compiled from the design. To change text in a cell, click on the cell, enter the information you need and press "Enter." Under File and Options, you'll notice that this inventory can be saved, printed, and modified much the same way as other spreadsheet applications.

Select Export from the File menu in the Bill of Materials to export your inventory to a file format for easy manipulation in your favorite spreadsheet or database application.

Microsoft Excel

File Edit View Insert Format Tools Data Window Help

D2 1

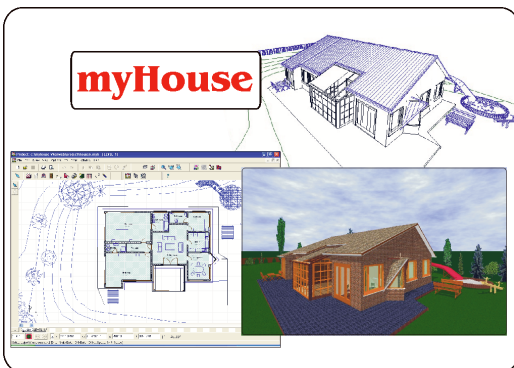
HOUSE7.xls

	A	B	C	D	E	F	G	H	I	J	K	L
1	Element name	Element ID	Size [m]	Pieces [pcs]	Unit price	Price	Length [m]	Unit price	Price	Area [sq in]	Unit price	Price
2	Wall (0/0)	None	=302,94 h=12,00 (t=14,94)	1	0	0	302,94	0	0	3487,51	0	0
3	Wall (0/1)	None	=96,00 h=12,00 (t=14,94)	1	0	0	96	0	0	1162,5	0	0
4	Wall (0/2)	None	=148,38 h=12,00 (t=14,94)	1	0	0	148,38	0	0	1705	0	0
5	Wall (0/3)	None	=74,07 h=12,00 (t=14,94)	1	0	0	74,07	0	0	852,5	0	0
6	Wall (0/4)	None	=150,19 h=12,00 (t=14,94)	1	0	0	150,19	0	0	1705	0	0
7	Wall (0/5)	None	=74,07 h=12,00 (t=14,94)	1	0	0	74,07	0	0	852,5	0	0
8	Wall (0/6)	None	=52,38 h=12,00 (t=14,94)	1	0	0	52,38	0	0	542,5	0	0
9	Wall (0/7)	None	=343,47 h=12,00 (t=14,94)	1	0	0	343,47	0	0	3952,51	0	0
10	Wall (0/8)	None	=103,47 h=12,00 (t=14,94)	1	0	0	103,47	0	0	1240	0	0
11	Wall (0/9)	None	=103,47 h=12,00 (t=14,94)	1	0	0	103,47	0	0	1240	0	0
12	Wall (0/10)	None	=1223,06 h=12,00 (t=14,94)	1	0	0	1223,06	0	0	3022,51	0	0
13	Wall (0/11)	None	=136,82 h=12,00 (t=14,94)	1	0	0	136,82	0	0	1627,5	0	0
14	Wall (0/12)	None	=334,04 h=12,00 (t=14,94)	1	0	0	334,04	0	0	3875,01	0	0
15	Wall (0/13)	None	=384,00 h=12,00 (t=14,94)	1	0	0	384	0	0	4572,51	0	0
16	Wall (0/14)	None	=384,00 h=12,00 (t=14,94)	1	0	0	384	0	0	4572,51	0	0
17	Wall (0/15)	None	=398,94 h=12,00 (t=14,94)	1	0	0	398,94	0	0	4572,51	0	0
18	Subtotal					0			0			0
19												
20	Wall (1/0)	None	=302,94 (t=14,94)	1	0	0	302,94	0	0	39912,58	0	0
21	Wall (1/1)	None	=96,00 h=112,00 (t=14,94)	1	0	0	96	0	0	7440,01	0	0
22	Wall (1/2)	None	=140,38 h=112,00 (t=14,94)	1	0	0	140,38	0	0	13020,03	0	0
23	Wall (1/3)	None	=74,07 h=112,00 (t=14,94)	1	0	0	74,07	0	0	4882,51	0	0
24	Wall (1/4)	None	=150,19 (t=14,94)	1	0	0	150,19	0	0	14182,53	0	0
25	Wall (1/5)	None	=74,07 h=112,00 (t=14,94)	1	0	0	74,07	0	0	4882,51	0	0

Sheet1/

Chapter

VII



7 Views

Your myHouse design is created in the 2-dimensional view. There are several commands in this 2D view that can help you draw and modify your plan. For example, you can zoom in on part of the plan, or use the layering command.

Part of the usefulness of myHouse is in its 3D viewing capability. Your 2D plans are transformed to 3D renderings with a couple of clicks of the mouse. Use these 3D views to help you visualize and critique your plan. For example, you can create a 3D movie, to simulate taking a video recording around the inside our outside of your design. You will even be able to save and replay this movie over and over.

7.1 Viewing in 2D

To change the 2D view of your plan, select a command from the View menu. Each command is described below:

7.1.1 Zoom



Zoom In: Increases the appearance of the design.



Zoom Out: Decreases the appearance of the design.



Zoom Window: Lets you select the portion of the design for which you want to increase the appearance. Drag a box around the area of the design you want to zoom into. When you click to enter the second cornerpoint, you will automatically be zoomed in on the boxed in area. This option is also accessible by clicking the Zoom Window icon.



Zoom to Extents: Increases or decreases the appearance of the design, to the extents of your floorplan, by placing the whole floorplan in the drawing area.



Last Zoom: Redisplays the last view of your design.



Default Zoom: Redisplays the original view of the design.



Set Zoom Window: Lets you specify a zoom view to redisplay. The Zoom Window Setup dialog box will appear. Change the specified values to change the size of the viewable screen. Click “OK” after making the changes.



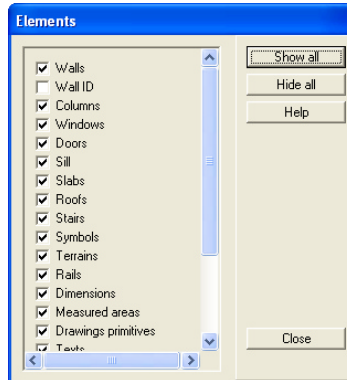
Air View: Displays the entire plan in the Air View dialog box. The colored outline will designate the drawing area. Drag the colored outline to change the display in the drawing area. This option is also accessible by clicking the Air View icon.



Redraw: Redisplays your current view. Select this option periodically to “refresh” your drawing area, especially after making some modifications to your design. This option is also accessible by clicking the Redraw icon or by pressing **F6**.

7.1.2 Foils - Layering

The Folis dialog allows you to choose those elements in your design which you want to view. Think of each set of elements as residing on a layer. For example, the layers might be doors, symbols, roofs, slabs, etc. You use the Layering command to view or hide the elements you choose.





1. Select Foils from the View menu to open the Foils dialog box. An example is on the next page.
2. Click the appropriate tab: “Elements” lists the design elements, and “Levels” lists the available floors, or levels.
3. Choose one of the following:

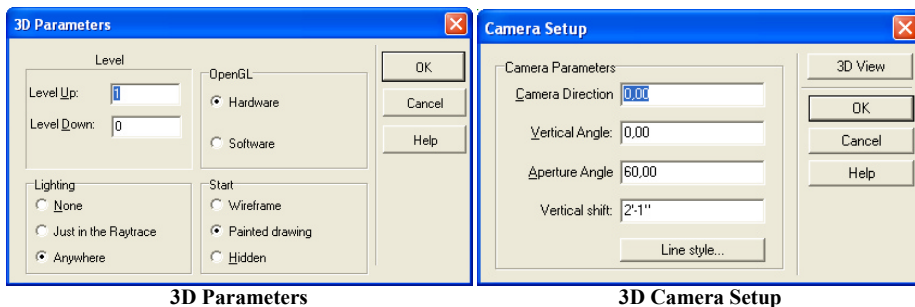
Click individual items in the list, until it is selected or deselected. As you change the selections on the list, your plan is automatically redrawn.

Click “Show all” to show all the elements or levels in the list. Click “Hide all” to hide all the elements or levels in the list.



7.2 Viewing in 3D


3D visualization of the project: from the outside and inside. The project can be visualized in 3 dimensions at any point. The most basic 3D view is the 3D image of the entire building from the outside. This is created by simply clicking on the  icon.

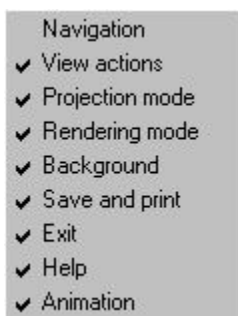
The inside view is created by first clicking on the  icon, and then putting down the camera, doubleclick on the camera and select the 3D view.






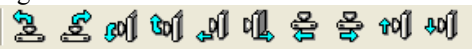
The 3D window has a different set of (upper row) icons, the wireframe or painted image of the project can be seen below. You may change between the wireframe and colored representations in the 3D/3D parameters menu of the 2D editing window or by

the   icons of the 3D window. The icons of the 3D window may be removed (and put back) by right clicking on the icon bar and choosing between the icons or by


the menu opening up after clicking on the  icon. The items marked with a small pipe are displayed in the icon row






The   icons (**Alt+1** or **Alt+2**) enable you to choose between the external: **Examine Alt+1** and the camera **Handycam Alt+2** views, while also determining which set of icons are displayed by switching on the Navigation menu:

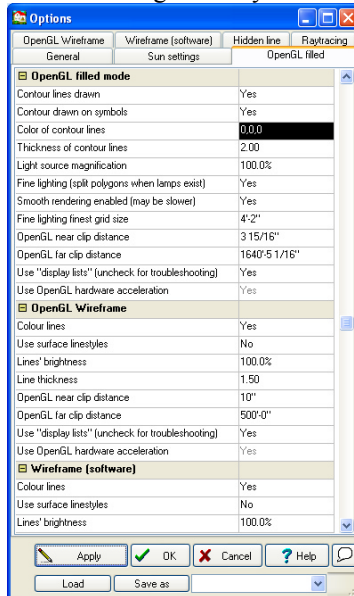
the rotating-moving arrow icons  or the camera adjustment icons .

The 3D picture can be rotated or moved around by these icons, **or by the mouse, including its scroll-wheel**. The adjustment of 3D parameters can be done (partly) in the **3D/3D parameters** menu of the 2D editing window. Other parameters can be




adjusted by clicking on the  icon of the 3D window. For example, you may set

Views

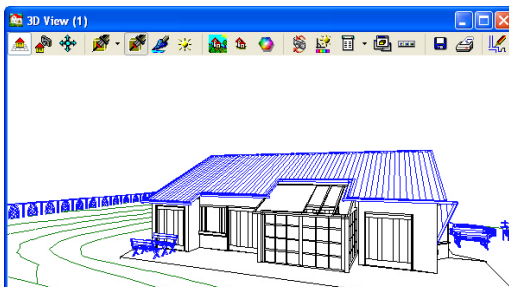
the optical parameters of painted images, the line colors for wireframe pictures here. The dialog has multiple sub-windows. Changing between   the colored and hidden line views is possible in Rendering mode by the  icons.



3D Options

By   the icons you can change between the perspective and frontal views, these icons are switched on by clicking on Projection modes in the right click menu. You may resume to 2D editing by clicking on the  icon.





7.2.1 Saving the 3D View

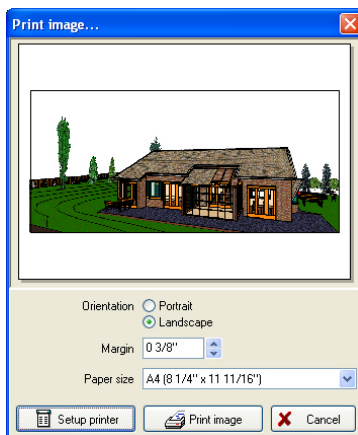
You can save wireframe and hidden line renderings in myHouse as **.DXF**, **.BMP** or **.JPEG** files. You can save painted views as **.BMP** or **.JPEG** files. When you click the Save icon, the Save dialog box appears, and you must specify a filename.

.WRL, **.WRZ** you can create virtual reality panoramic images that can be explored interactively both on your PC and on the Internet. You can navigate within the 360° scene, jump to another scene, zoom in and out in real time.

7.2.2 Printing the 3D View

You can print from any perspective or angle in the 3D views in myHouse. Once you have the desired view, follow these steps to print:

1. Click the Print icon



Print image

2. Select the options you want in the Print dialog box that appears.
3. Click "OK."

7.2.3 DreamScape


MyHouse contains a feature where you can place the design of your dreams in the setting of your dreams. This is the DreamScape feature where you can select from over 75 different full color images to view in the background of your 3D view. These images are accessed from the myHouse CD by following these directions.

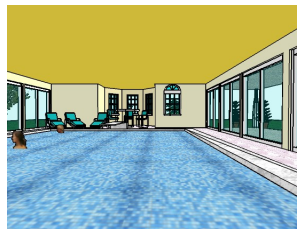
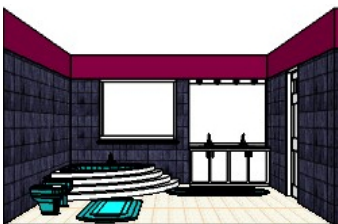
1. Click the **Add DreamScape** icon
2. In the dialog box that opens, select the file.
3. Double click on the desired DreamScape bitmap. The selected image will appear behind your 3D rendering.
4. To clear the DreamScape, click the Clear DreamScape icon next to the Add DreamScape icon.

You can move your plan in this dreamscape. Press the left button of the mouse and moving the plan with the little hand pressing the mouse button or click on one of the icon of the rotation arrows or cameras.

7.2.4 Ray Tracing

Ray tracing is a technique for image creation that is capable of producing high- quality, photo-realistic images. It does, however, require significantly longer calculations than the usual polygon rendering techniques. Special 3D hardware available for personal computers implements some simple rendering methods, but, unfortunately, none of them help with ray tracing. The speed with which ray tracing is carried out ultimately depends on the power of your processor (CPU). Although ray tracing doesn't require much memory, setting up some virtual memory is a good idea, especially if you work with big plans.

You may transfer the 3D image to the ray tracing module . First, it is expedient to check the appropriateness of lighting/shadow adjustments on a small preview picture. If you do not find them satisfying, go back to the painted 3D image and readjust the lighting settings (direction). If the preview seems to be OK, you should create a picture of a resolution of at least 1000×700, with smoothing and reflections. The raytraced image is created in 2 steps (the second being the smoothing of the image). Besides the default BMP format you may also save the image as a compressed JPG file.





7.2.4.1 Panoramic Images

In the ray tracing module of myHouse you can also create panoramic (360 degrees) images and save them in QuickTime **MOV** file format. The advantage of panoramic images is that once created, you can interact with it in a way similar to actually being present using the QuickTime virtual reality viewer provided with myHouse. You can look in any horizontal direction, look up or down (within a range determined by image settings), and zoom in or out. Panoramic images are most useful with interior scenes because one image holds all that you could see in any direction from the defined viewing point. The disadvantage of panoramic images is that they need greater (approximately twice as big) resolution than standard images to look good.

Go to the Options menu and check the “Create panoramic image” box. The resolution depends on the width of the image, while the vertical range that will be included depends upon the height. We recommend setting the height to 50% to 80% of the width.

To change panoramic image options, press the Settings button and use the Options menu. Note that default vertical zoom angle and image compression quality can be set after tracing and before saving.

After setting the options, press RayTrace. If you have checked the The image that appears in the main window looks a bit unusual because it is only a technical representation of the panoramic image. The final result is shown in a separate window. Next, you may save the image into MOV file. Later, you can view the image with the Show option in the File menu.

7.2.4.2 3D MovieMaker

The 3D MovieMaker in myHouse lets you create a movie from a sequence of camera shots. You can save this movie and replay it over and over as a way to walk through your dream home before construction is complete.

Creating a movie is a simple, three step process, as explained below. First, you place the cameras in 2D to take the picture frames, then create the movie (you'll have many options here depending on what type of movie you desire) and, finally, play the movie.

Placing the Cameras

1. Select **Place Camera** from the **3D** menu. A colored outline of a camera will appear indicating the field of view.
2. Place the camera in position to capture the first frame of the movie. Rotate the camera using your "+" or "-" keys until it faces the direction that you want. Remember, pressing "F3" will rotate the camera in increments of 5 degrees.
3. Click to anchor the camera view.
4. You will still have the colored outline of the camera attached to your cursor. Move and rotate the camera into position to capture the next frame, and click to anchor it.
5. Choose one of the following approaches:
 - a) Define the remaining shots manually by moving the camera, placing the shot, and clicking the mouse until you have captured all the frames you want. Click the right mouse button when you are done to escape the Place Camera function.

Note: The more shots you take and the closer together the shots are, the more fluid your movie will seem. However, increasing the fluidity will increase the length of time it takes to create the movie.

Choosing this approach, your design will look something like this:

- b) Let *myHouse* enter a series of camera shots by selecting the second camera placed and then double-clicking on it to open the Camera Setup dialog box. Change the options in the dialog box and click "OK" when you are finished.

Camera Direction: Indicates the direction the camera is pointing.

Vetrical Angle: The camera angle in the vertical plane. To look downward, enter a negative number. To look upward, enter a positive number.

Aperture Angle: Indicates how wide the view will be. The higher the number, the wider the view.

Height: The height of the camera above the floor.

Steps from the Previous Camera: The number of frames automatically added between the current frame and the previous one. The larger the number, the more frames there will be.

Camera Index: The order in which the camera shots will be used in the movie.

Note: You can alter individual camera shots in option “a” by double-clicking a selected camera to open the Camera Setup dialog box.

If you want to create QuickTime (.MOV) movie

You have to sign the Camera Gate too. Select the Place QT gate from 3D menu. Click two QT cameras and then on a window or door to select the place of the “gate”. The gate is the place where you can jump from one room into another. Instead of selecting a door or window as a gate you can also draw your own gate by drawing a line or a polygon simply by clicking its edges and then doubleclicking at the last point.

If you select the gate and then right click or doubleclick on it you can change the gate’s properties (Height, Vertical shift)

If you draw just a line, the Height would mean the height of a rectangular gate with the width determined by the length of the line.

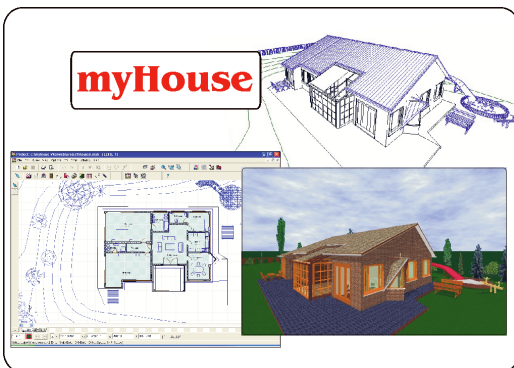
If you draw a polygon the gate will be placed horizontally at the height determined by the Vertical shift parameter.

Playing the Movie

1. Select **Play Movie** from the **3D** menu. The Media Player will appear. Just below the Media Player is the screen that will show the movie.
2. Click “Play” to run the movie.

Chapter

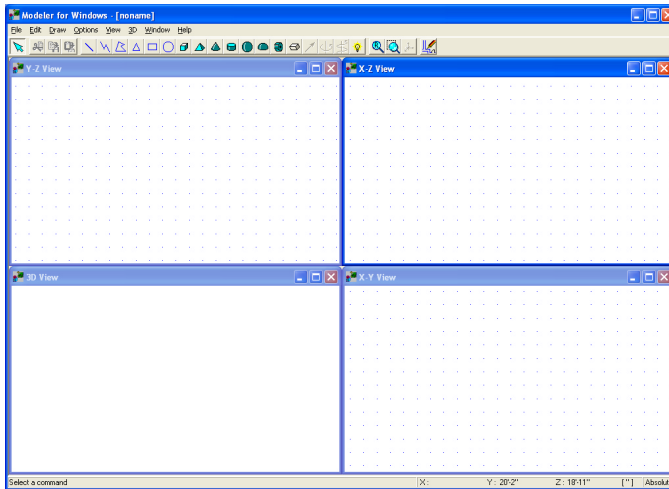
VIII



8 3D Modeler

MyHouse includes a large number of predrawn symbols. For most designs and floorplans, these should be sufficient. For plans that require that special table, bed, fireplace, or any other symbol, you can create it from scratch using the **3D Modeler**. You'll also be able to modify any of the symbols in the myHouse libraries.

8.1 The Views



3D MODELER

To properly assemble a symbol, you must look at it from three 2D vantage points as well as in a 3D rendering. Below is the Modeler drawing screen with a symbol already created.

The views are:

Y-Z View: The head-on view of the symbol. **X-Z View:** The side view of the symbol.

X-Y View: The aerial view looking down on the top of the symbol.

3D View: The 3D perspective drawing of the symbol.

In all the views, you see a line drawing without regard to the transparency of the various lines and solids in the drawing. Also, individually, none of the 2D views offers any perspective with relation to the third dimension.

8.2 The Toolbar

Like the main program, Modeler contains a toolbar above the drawing screen. Each function is explained below. To see the name of any of the icons on the toolbar, position the cursor over that icon.

Select: Provides an arrow with which to select icons or parts of the drawing for modifying.

Cut: Cuts the selected object(s) to a special *myHouse* clipboard.

Copy: Copies the selected object(s) to a special *myHouse* clipboard.

Paste: Copies the contents of the clipboard to the Modeler drawing area.

The set of simple blue icons are used to create 2D elements that can be decorative, but have only length and width. They are:



Line Polyline Polygon Triangle Rectangle Circle

The 3D symbols are green symbols that have length, width, and height. These can be controlled to be a complete solid or open at the top and/or bottom. The 3D symbols are:



Brick Pyramid Cone Cylinder Sphere Hemisphere Gear-wheel

In addition to the icons for drawing elements, the toolbar contains some advanced buttons used to transform 2D objects into 3D solids. An explanation of these four occurs later in this chapter. They are:



Solid of Revolution Axis



Prism object and Vector



Spiral Axis



Light source

The next two icons are functions that should be familiar to you from the *myHouse* program. They are:

Redraw

Zoom Window

The remaining icon is used to generate a full-screen 3D view of the symbol you are creating.

Total 3D

8.3 The Menu

There is also a menu above the icons in Modeler. Below is an explanation of the menu choices that are new. The rest should be familiar to you from the *myHouse* program or are explained previously in this chapter.

From the File Menu:

Open from Library: Use this function to open an existing symbol from a *myHouse* library into Modeler for custom modification.

Insert to Library: Use this function to insert the symbol created in Modeler into *myHouse*. You will be prompted to choose which library you want to insert the symbol. For best results, create a new library for all your custom symbols by entering a new file name when prompted. Then, give a description of the symbol and click “OK.” The symbol will then be added to the library you created.

Delete from Library: Use this function to delete a symbol from one of the *myHouse* libraries.

From the Options Menu:

Default Values: Each drawing element (brick, cone, line, etc.) is given a default size and color. Use this function to change the default size or color of any of the building elements for accuracy when creating your new symbol.

Note: Select a surface texture for your new symbol from the symbol library in *myHouse*.

8.4 Helpful Hints

Don’t worry about where you start building your object. By default, the first object you insert is in the approximate center of the drawing field, allowing you plenty of room to build in any direction.

Rotate an element in the desired view with the “+” and “-” keys on your keyboard. The element will rotate in increments of 5 degrees.

When you are done with your symbol and it has been inserted into a library, you can modify its entire dimensions before placing it into your design, just like any other predrawn *myHouse* symbol.

Whenever possible, modify an existing symbol. That way, some of the work will already be done for you.

Resize an element by moving the cursor to the red or green corners until the cursor becomes a two-headed arrow. Hold the left mouse button down and drag the cursor to resize the element.

If elements overlap, you can select an element by clicking on it and pressing “Ctrl” and “N” at the same time as necessary to select the appropriate element.

If you have multiple occurrences of the same object (such as table legs), create the first one and use the Modeler copy and paste commands to replicate it. With this approach, the table legs will be exactly the same size.

As you move the cursor between the three 2D views, you will see where the element is

placed in the other views, including the 3D view. To make it easier to visualize the placement, one corner of the object is green and the opposite corner is red. The green corner corresponds to the same point in all three of the 2D views.

Here are some hints to help in assembling your own symbol.

When an element is selected, you can move it with the arrow keys on the keyboard as well as the mouse. Use the arrow keys to move the element 1" at a time. Hold "Shift" down to move the element in 1' increments.

8.5 Creating a Symbol

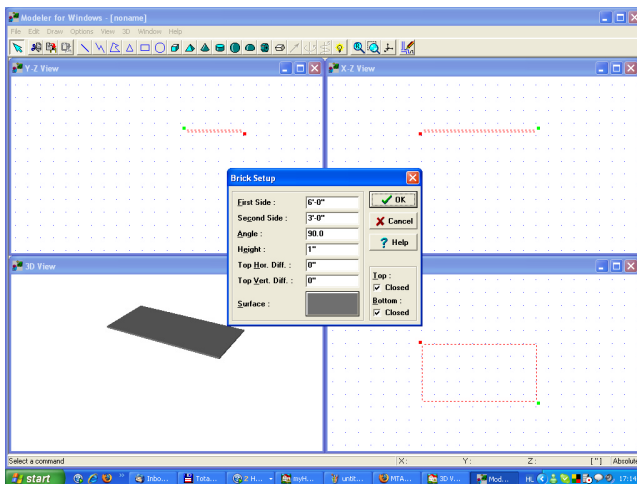
This section is a tutorial which will take you step by step through the creation of a desk. When you are done, the desk will look like this:

1. Start by creating the desktop. Select **Default Values** from the **Options** menu and drag to the right to select **Brick**. The Brick Setup dialog box appears. Enter these values and click "OK."

X Size: 6'-0"

Y Size: 3'-0"

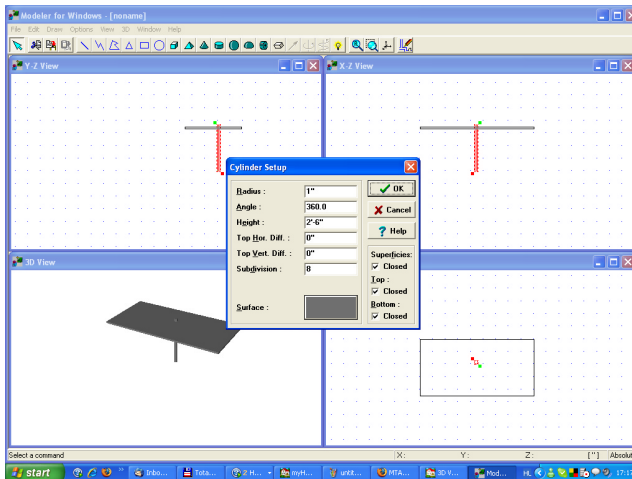
Z Size: 1"



You can also select a color for your desktop by clicking the color tile next to the word "Surface."

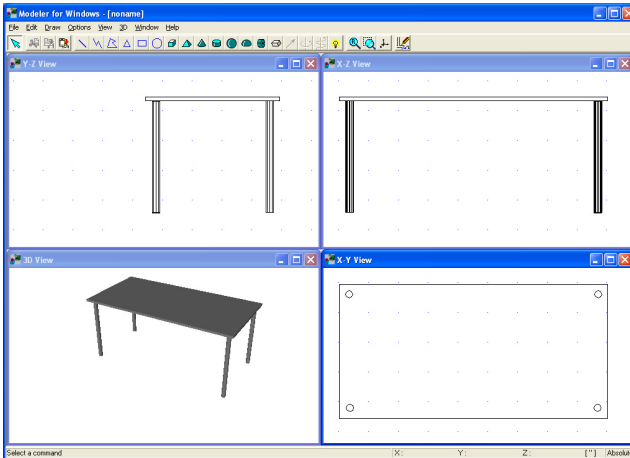
2. Select the Brick icon and place the large rectangle in the center of the X-Y view so that it looks like the picture below. To do this, you may need to rotate the rectangle in the Y-Z view.
3. Next, create the legs of the desk. Select **Default Values** from the **Options** menu and drag to the right to select **Cylinder**. Make the following changes to Cylinder Setup dialog box.

Radius: 1"
Height: 30"



Leave the other values as they are and click “OK.”

4. Select the Cylinder icon and place the cylinder in the X-Z view below the desktop. You will need to rotate the cylinder by pressing the “+” or “-” keys on your keyboard so that it looks like the picture on the next page.
5. Once one leg has been placed, use the Copy and Paste command to create the three other table legs and position them as they are shown below. Or, repeat step 4.



Note: For greater accuracy in placement of the table legs, you can zoom in on the area.

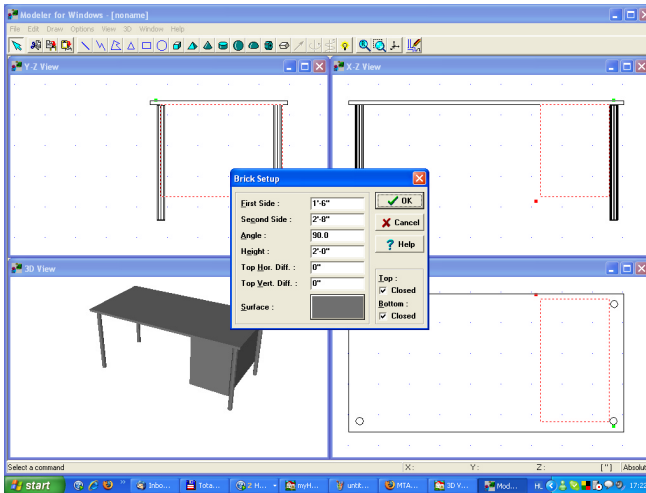
6. Next, we will create some drawers for the desk. Select **Default Values** from the **Options** menu and drag to the right to select **Brick**. The Brick Setup dialog box will appear. Enter these values and click “OK.”

X Size: 1'-6"

Y Size: 2'-8"

Z Size: 2'-0"

7. Select the Brick icon and place the rectangle under the desktop in the X-Z view and position it so the edges of the rectangle meet the edges of the desktop in the X-Y view. The resulting desk should look like the picture on the next page.



8. Save your new symbol. Select Save As from the File menu. Give the symbol a filename and click “OK.”
9. Insert your desk to a new library for placement into your *myHouse* plan. Select **Insert to Library** from the **File** menu. Modeler will ask if you want to modify the 2D and 3D views. Click “NO” for now. You can experiment with this later.

The **Insert to Library** dialog box will appear prompting you for a file name. For best results, enter a file name such as “Personal” or “New” or “Custom” or anything other than one of the names of the current libraries. Click “**Open**” after entering the file name.

The **Symbol Settings** dialog box will appear. Enter a symbol description and click “OK.” The symbol is now in your new library in the *myHouse* program.

10. Now we will place your new symbol in a design. Open *myHouse* and open the plan you need. Click the Symbols icon and then open any one of the symbol libraries by clicking an icon on the secondary toolbar. That library will open. To open the library you just created, click the down arrow next to the library name to bring up the list of libraries and click the name of the library you just created to open that library. Your custom symbol should be in that library ready for you to modify, rotate, and place like any other *myHouse* symbol.

8.6 Advanced Techniques

Solid of Revolution Axis and **Prism Vector** provide the tools needed to give a 2D element depth. Use **Prism Vector** to give elements basic thickness. This could be very handy when creating a deck with irregular sides. **Solid of Revolution Axis** gives elements cylindrical thickness. Both features work in similar fashion.

For example, using the deck example, draw a 2D polygon in the **X-Y view** and select it with a left mouse click. Select the **Prism Vector** icon. In the other two views, you will see a small green box and a dashed line connected to the 2D polygon. The **Prism Vector** icon has also changed to a **Prism icon**.

Control the amount of thickness to give the element by moving the green box with the mouse or arrow keys and then click the Prism icon. Modeler will transform the 2D element into one with three dimensions.



Prism icon

To create exotic figures with curves, use Solid of Revolution Axis. For example, start by placing a 2D triangle into the X-Z view and select it with the left mouse button. Select the Solid of Revolution Axis icon. A dashed line with green and red boxes will appear and the Solid of Revolution Axis icon has changed to a Vase icon.

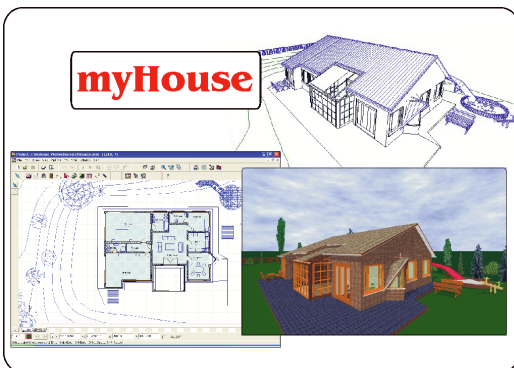
Anchor this dashed line with a single mouse click. Control the amount of thickness to give the element with a single mouse click on either the red or green end of the line and adjust with the mouse or keyboard arrows. Select the **Solid of Revolution Axis** icon which now looks like a vase to transform the 2D element into a curve-based 3D element.



Solid of Revolution Axis icons

Chapter

IX



9 Hints & FAQ's

9.1 Frequently Asked Questions

Walls:

Q: *How do I add surface textures to a wall?*

A: Double click on a selected wall. The Wall Settings window will appear. Click on the color slide for the side you want to add the texture. Choose the texture you want and click “OK” twice.

Q: *As I'm drawing my wall, I notice the wall is on the wrong side of my crosshairs. How do I flip it to the other side?*

A: Pressing the Spacebar will flip the wall to the other side of your crosshairs.

Q: *How do I draw walls at angles other than 90 degrees?*

A: You can Disable or Enable the program's Ortho option by selecting **Ortho** from **Options** or pressing **Ctrl O**. Ortho enforces the drawing of orthogonal walls, walls at 90 degrees to each other.

Q: *I can't seem to get my “Cut Wall” function to work. Why?*

A: To cut a wall you need to position your crosshairs in between the two lines that make up the wall and be at least 6” (or 10 cm) from a wall joint.

Q: *Do I have to use the mouse to create walls?*

A: No. Use the arrow keys on your keyboard to move the crosshairs 1” at a time and the “Enter” button to anchor endpoints. Hold “Shift” down to move in 1’ increments.

Q: *How do I extend/shorten a wall without having to redraw it?*

A: Click the Edit arrow, then position the cursor so it is on the end of the wall. The cursor should become a circle. Click and drag to the new wall length.

Grid Points:

Q: *How do I change the relative distance of the grid points?*

A: Go to **Change Grid** under the **Options** menu and enter new values. Make sure you click the “Redraw” icon after clicking “OK.”

Q: *My grid points disappeared. What happened?*

A: User turned grid points off or they are too close together to view in present zoom mode. Zoom in or select **Change Grid** from the **Options** menu and make sure “visible” is checked. Also, click “Redraw” icon.

Symbols:

Q: *How do I rotate symbols in increments of less than 45 degrees?*

A: Before placing the symbol, press the “F3” key. Then press the “+” or “-” keys to rotate the symbol in 5 degree increments.

Q: *How do I rotate a symbol once its been placed?*

A: Select the symbol and hold the mouse button down on the symbol while pressing the “+” or “-” keys on your keyboard.

Q: *How do I change the color of a symbol, or add a surface texture to it?*

A: After selecting the symbol from its library, click the “Surface” button at the bottom of the library. A “Change Properties” window will appear. Click on the color you wish to change and choose a new color or texture. Click “OK”, then place the symbol as you would normally.

Q: *How do I delete a symbol?*

A: Click the “Selection Tool” icon. Then, click once on the symbol you want to delete so that it becomes red. Press “Delete” on your keyboard.

Q: *How do I highlight/select a symbol that is on top of another one?*

A: Click on the symbol you want to highlight/select. Press the Spacebar to toggle between elements on top of each other.

Q: *How do I edit a symbol once it has been placed in my design?*

A: Click the “Selection Tool” icon, then double click on the item you want to edit. The symbol library for that symbol will open. Make the desired changes and click “OK.”

Q: *How do I place a symbol on top of another one?* For example, a lamp on a table. **A:** After selecting the lamp, change the “Vertical Shift” value to be the height (z- size) of the table. Then position it over the table and click to anchor it.

Stairs:

Q: *Can I create a spiral staircase and how do I do it?*

A: To create a spiral staircase, use the Stair Designer as described in Appendix B, section 2.3.

Q: *How do I correctly install a landing for a split staircase?*

A: Landings must be connected to two sets of stairs. Vertically shift the upper portion of the stairs to the desired height. The landing will automatically adopt the shift of the set of stairs.

Dimension Lines:

Q: *How do I insert an automatic dimension line?*

A: First, use your crosshairs to select the wall you want to dimension. It will become highlighted. Then, draw the dimension line parallel to and longer than the wall you've selected. The dimension line will appear after entering the second point of the dimension line.

Q: *How do I change dimension line styles?*

A: Select **Dimension Settings** from the **Options** menu. Or, click the Dimensioning icon on the top toolbar. Then, click the top icon on the secondary toolbar that appears on the left side of the Drawing Area.

Roofs:

Q: *How do I fill in the gable ends of my roof with walls?*

A: After the roof has been placed, go back and increase the height of the walls in your plan to that of the top of the roof. The roof will automatically cut those walls.

Q: *How do I make a specific roof that is not in the roof library?*

A: To create a specific roof, use the Roof Designer as described in Appendix A.

Slabs:

Q: *Do I have to draw the slab first?*

A: No. You can add the slab at any time. It will automatically become the floor of the level you're working on unless you change its vertical shift.

Q: *How do I add carpeting to my floors?*

A: A separate slab needs to be created for each section of carpeting. After the slab has been created, double click on it to open the Slab Settings window. Click the color tile for "A side." Choose the carpet texture you want and click "OK."

Printing:

Q: *Sometimes when I print, my plan is very small on the paper. What is causing this?*

A: Most likely, you have an outlying element in your plan that needs to be deleted. To check this, select **Zoom to Extents** from the **View** menu. If your plan is smaller than the Drawing Area, you need to scroll around and locate this outlying element and delete it.

Q: *Does myHouse print to scale?*

A: Yes. myHouse will print to any scale or will print as "Fit to Paper" and note the scale used on the printout.

Q: *Can I print my 3D views?*

A: Yes, myHouse allows you to print any 3D perspective rendered with the software.

3DMovieMaker:

Q: *The movies I generated are running too fast. Can I slow them down?*

A: Yes. To do this, change the number of frames per second in the “Create Movie” window to a lower number before clicking “Start.” “5” is a good number to use.

3D:

Q: *How do I position my camera on the second floor for a 3D Internal View?*

A: To position your camera on a floor other than the first, you’ll need to change the height of the camera in the Internal View Parameters window, adding in the height of the floor(s) below the one on which you want to place the camera.

Zoom:

Q: *Can I view my whole design at one time even though it’s larger than the Drawing Area?*

A: Yes. Select **Zoom to Extents** from the **View** menu.

Snap:

Q: *What is the Snap feature and why is it useful?*

A: Enabling Snap will make walls and Slabs jump to the nearest gridpoint. This is helpful if you’d like to line up the walls exactly on the edge of a slab.

9.2 Hints

1. The arrow keys on your keyboard can be used for wall creation. Hit “**Enter**” instead of clicking your mouse button and press the arrow keys to move the crosshairs. Holding “**Shift**” down while moving the crosshairs moves them in 1’ increments.
2. For best results, create slabs automatically last. Unless you change the vertical shift, it will automatically fall to be the floor of the level you are on.
3. Instead of trying to drag a wall to a new position/length, it is recommended that you delete that wall and recreate a new wall in the desired location using the arrow keys as described above.
4. The “**Ctrl + F2**” key saves your design automatically. Save often. Note that myHouse automatically saves your current project every 10 minutes if the **Options/ Auto Save** option is enabled. For important projects, it is wise to save the main

phases of the project under different names (e.g., myproject1.myh, myproject2.myh etc.) so you can return to them if necessary.

5. To line up multiple levels, go to **View/Foils** and click the “Levels” tab. Click the Level you wish to view at the same time as the current level.
6. Placing slabs on the inside of your walls between levels will give you a more realistic 3D rendering.
7. For faster 3D renderings, go to **View/Foils** and hide some elements before generating the 3D view.
8. Slabs can be resized and shifted to make other building elements like shelves, beams, etc.
9. Pressing the “**F3**” key allows you to create walls down to the 1/16th on an inch. Also, it allows you to rotate objects in increments of 5 degrees.
10. To see your whole plan on the screen, select **View/Zoom to Extents**.
11. Enabling “**Snap**” turns on the smart cursor for easier editing.

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